RAILWAY TRACK and STRUCTURES

This Issue...

Point Program

M/W Progress

South Shore Raises

28-Ft. Span 6 Ft.

Oil Separator

Is Accessible

Using a Wet

on the Erie

Try Out

Concrete Sleepers

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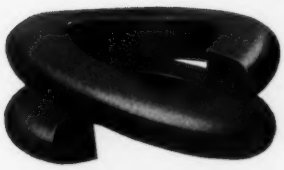
IMPROVED HIPOWER

SUPER HIPOWER



DOUBLE HIPOWER

THACKERAY

SUPER COLLAR GROOVED

NATIONAL COLLAR GROOVED

6 MAINTENANCE COST REDUCERS

Here are six outstanding types selected from our complete line of railway spring washers. Any one will reduce maintenance cost somewhere on your road. These six meet practically every railway need —whether it be for reduction of maintenance on straightaway or tangent tracks, for frogs and crossings, for anchor screw spikes.

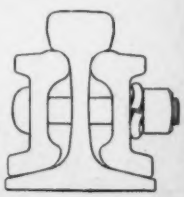
National's spring washers are used extensively—used by many many roads—along thousands and thousands of miles of track—on frogs and crossings throughout the world.

They have been tested, tried and found more than adequate.

If you use one or only a few of these great railway spring washers let our engineers discuss with you the other types that could further reduce your maintenance costs.

IMPROVED HIPOWERS

IMPROVE TRACK



THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

Safety with economy when you equip every track joint bolt with RELIANCE HY-PRESSURE HY-CROME *spring washers*

IT REQUIRES "work a plenty" at track level to insure safety of operation at all levels. You can have safety and economy too, by using Reliance Hy-Pressure Hy-Crome spring washers.

Hy-Pressure Hy-Crome spring washers are scientifically developed and manufactured by experienced personnel. They are produced in a modern plant employing the finest equipment. From the hot rolled steel to the carefully finished heat treated product, Reliance spring washers are carefully controlled under the most favorable conditions.

A word from you will bring a visit from one of our railway fastening engineers with some ideas that might be mutually profitable. Hy-Crome washers are made for track joints-frogs-switches-crossings, also for cars and motive power.

"Edgemark of Quality"

EATON MANUFACTURING COMPANY, RELIANCE DIVISION

OFFICE AND PLANTS • MASSILLON, OHIO

SALES OFFICES: NEW YORK • CLEVELAND • DETROIT • CHICAGO • ST. LOUIS
SAN FRANCISCO • MONTREAL

Takes the fight out of Heavy Switches

This is a switch stand with plenty of power—the type of power needed with heavy rail. It's Bethlehem's Model 53, one of the simplest, most "muscular" stands ever put on the market. Yet, in spite of the great leverage it develops, it's easy to throw.

The heart of the stand is Bethlehem's well-known sliding-block-and-crank device, which is pictured here. Study the photograph. Visualize yourself lifting the lever. During the course of the throw, the machined steel block slides upward, then downward, describing an arc as it travels. The force of its movement is passed to the spindle, which rotates smoothly and thereby changes the position of the crank.

Only three moving parts. Nothing that can lead to complications. Nothing that ever demands laborious, costly maintenance. Simple, effective, and always powerful . . . that's the 53!

We can highly recommend this husky, durable stand for both main-line and heavy yard duty. For more details, talk with a Bethlehem representative; he will be glad to supply full information.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation. 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 49, No. 2.

THE POWER TRACK CRIBBER

Two cribs a minute! Just a single operator! This is what you can expect from the Pullman-Standard Power Track Cribber. And this is how one railroad saved $86,232 during the 1952 work season. Powered by a 100 hp. gasoline or Diesel engine, the Cribber travels to and from location at a speed of 25 mph.

Power-operated jacks and transverse wheels permit complete set-off in three to five minutes. With a normal production rate of 100 to 225 track-feet an hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically in any type of ballast regardless of cementation.

TRACK CRIBBED UP TO THE "PULLMAN" STANDARD

Track cribbed up to the "Pullman" standard! The 7,200 lb. drop-head of the Cribber drives its digger bars into the crib and cam action forces them outward to loosen the ballast and clean the crib. For proper drainage, the Cribber cuts a uniform sloping profile level with the tie base at track center and 3½" lower at the tie ends. Digging depth can be controlled to meet varying rail height conditions and specified depths. Seldom limited by skewed ties, the machine is readily moved back and forth in the crib to permit thorough cleaning. Even if ballast is level with top of ties, it can put the cribbed ballast on the track shoulders for subsequent cleaning.

Savings-the mechanized way

MECHANIZED TRACK MAINTENANCE ASSURES DEPENDABLE WORK PERFORMANCE AT LOWER COSTS

While railroad income has risen steadily in the past few years, maintenance costs have gone up proportionately much higher.

Mechanized maintenance can reverse this trend and at the same time give you better, longer-lasting track. In the fight for operating economy, the Pullman-Standard Power Track Cribber has proved itself to be one of the best weapons in reducing today's costly labor requirements. For instance, it permits a single operator to crib 100 to 225 track-feet an hour, the equivalent of the work of several section gangs. In fact, one railroad reports the Power Cribber equals in one hour the whole day's work of five men...another, that one cribber saved $47,000 in out-of-pocket costs in just one work season.

But the Cribber is just one of the Pullman-Standard designed machines that *work* for the railroads—the Power Ballaster and the Power Ballast Cleaner-Winch Car team are engineered to cut maintenance costs and pay for themselves out of savings. If you want immediate operating economies and superior production results, get the facts on Pullman-Standard mechanized maintenance-of-way equipment by contacting our nearest office and asking a representative to call.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

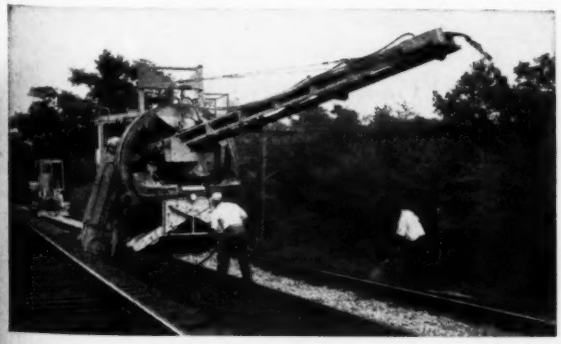
PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

79 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO • THE HOLDEN CO., LTD., MONCTON, MONTREAL, TORONTO, WINNIPEG, VANCOUVER



THE POWER BALLAST CLEANER AND WINCH CAR TEAM

For the first time both track shoulders can be cleaned simultaneously at 1000 to 1200 feet an hour with only four men. Even in multiple track territory, the shoulder plus half the six-foot are cleaned to a depth of eight to ten inches below the tie base at the same high rate and with the same labor requirement. Winch Car develops 30,000 lbs. of tractive force.

THE POWER BALLASTER

$70,000 in out-of-pocket savings! This is what one railroad saved during the first year of Power Ballaster operation. With a production rate of 500 to 700 feet an hour, the Power Ballaster has the highest proved equipment availability of any other production tamper. It's designed to the "Pullman" standard for better work, more of it, and with less labor.

Economical

WEED CONTROL SERVICE

Through Strategically Located Plants

Shown above are the eight Chipman Chemical Company weed killer plants in the United States . . . strategically located in major railroad centers to give you economical service, both in materials and application of chemicals. Also shown are plants operated by Chipman Chemicals, Ltd., the associate company in Canada. These plants afford economical, convenient servicing of Canadian lines.

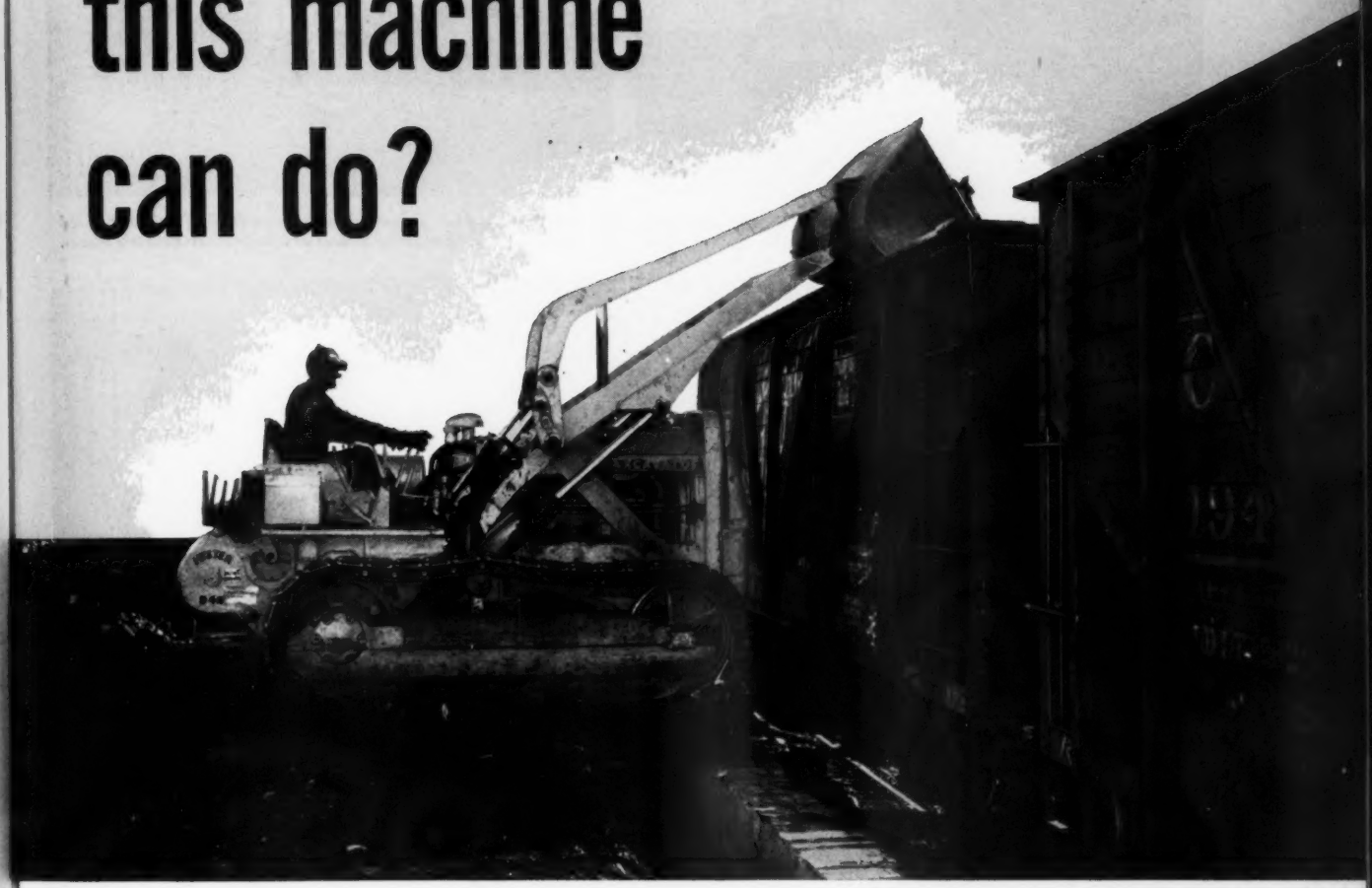
Strategically located plants and a complete line of *proven* weed killing chemicals are two big reasons why you can get dependable, low cost weed control service . . . backed by 40 years of experience . . . from either of these two companies. Write today for further information and descriptive literature on the weed killers listed below.

ATLACIDE LIQUID & SPRAY POWDER • CHLORAX LIQUID & SPRAY POWDER
TCA-CHLORAX LIQUID • ATLAS "A" WEED KILLER • BRUSH KILLER

CHIPMAN CHEMICAL CO.

Manufacturers of
Railroad Weed Killing Chemicals Since 1912

Ever count the jobs this machine can do?



A machine that can handle many different jobs, this Caterpillar HT4 Shovel has a 9′ 6″ dumping height, 7′ 9″ dumping clearance and 2′ 8″ dumping reach.

NOTICE how high lift and heft are combined in this Caterpillar HT4 Shovel. Perfectly balanced, this unit is loading 1 to 1½ tons of coal per shovel into railroad cars on a siding near Canton, Illinois. Averaging 50 trips per hour over a 50-foot haul, it delivers 550 to 600 tons production per 8-hour day.

This is just one of a score of jobs a Cat Shovel can do – and do well for you. It's an all-purpose tool with a specialist's ability in such varied tasks as cleaning right-of-way ditches, building dikes, stockpiling, spotting cars and removing snow. And it's ruggedly built to stand up under rough going. For instance, its rigid all-welded girder-type frame, cross braced for extra strength, is mounted close to the carrier rollers to take loads off transmission case and tractor frames. Its box-section, all-welded lift arms are braced to prevent twisting. And its hydraulic system is fully enclosed to keep dirt out and oil in.

These and many other features explain why the Caterpillar HT4 Shovel stays on the job day after day with a minimum of down-time. You can't beat it as a money-saving tool. And you can't match the excellent parts service available from your nearby Caterpillar Dealer. He'll be glad to give you full facts about this versatile machine. Call him today for information and a demonstration.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Cleaning cinders from track and between ties is customarily a hand job to avoid damaging rails, ties and tie-plates. Gradall does it fast, neatly and safely.

A quick change of an attachment—a matter of minutes—and Gradall is at work making a neat drainage ditch between tracks.

Gradall's unique arm-action*—shown here restoring embankment—permits working in close quarters, under low wires, against walls, between and around obstructions.*

Gradall travels from job to job in truck time—negotiates crowded yards, bridges, and narrow passageways with ease.

The multi-purpose Gradall *multiplies savings* on off-track maintenance

ALL KINDS of standard and special attachments can be interchanged in a few minutes, enabling Gradall to do the work of many one-purpose machines. It digs trenches, sets pipes and forms, widens cuts and fills, excavates, restores embankments, rips and loads old pavement, cleans ditches, cuts and grades slopes, and backfills.

Gradall, with its powerful hydraulic *arm-action* and *controlled down pressure,* brings new versatility and precision to off-track maintenance. It multiplies savings by doing the work of several one-purpose machines—by eliminating costly hand labor—by speeding up in-transit time.

Maintenance men everywhere are proving that Gradall does *more* jobs *better* and at *lower cost.* It will pay you to investigate Gradall. So contact your nearest Gradall Distributor for a field demonstration . . . or write The Warner & Swasey Company, Cleveland 3, Ohio.

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY SINCE 1880

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

DOW

CHEMICAL BRUSH CONTROL BY THE MILE!

ESTERON® BRUSH KILLER Controls Brush and Weeds Along Railroad Right-of-ways.

Photo courtesy of R. H. Bogle Co.

Brush and weed control along thousands of miles of roadbed is a big job—one that calls for the most effective chemicals available. Esteron Brush Killer is first choice with spray service companies and railway maintenance men. Here's why this *proved* formulation should be your first consideration in a successful brush and weed control program:

Esteron Brush Killer has given outstanding results in all sections of the country. It contains 6.31 lb. per gallon (4 lb. acid equivalent) of the more powerful low-volatility esters of 2,4-D and 2,4,5-T.

Esteron 245, containing 2,4,5-T esters, is especially effective against poison ivy and other 2,4-D resistant species. This product also is recommended for year-round stump treatment and basal bark application. (Grass in ballast? Use Dow Sodium TCA 90%.)

Ask your supplier or write for literature on right-of-way vegetation control. THE DOW CHEMICAL COMPANY, *Agricultural Chemical Department*, Midland, Michigan. In Canada: Dow Chemical of Canada, Limited, Toronto, Canada.

you can depend on DOW AGRICULTURAL CHEMICALS DOW

Let these NORDBERG *"Mechanical Muscles"** handle your RAIL LAYING OPERATIONS

MANUAL rail laying operations take too much time—cost too much money —and often result in a poor quality job. There is a simple, efficient answer . . . *modern mechanization with Nordberg Maintenance Machinery.* Every one of these Mechanical Muscles"* is designed and built to do a better, faster job for you at lower cost. Can you afford *not* to find out what these machines can do to save money for your road? *Write for bulletins.*

SPIKE PULLERS—Faster spike pulling speeds up re-laying, reduces the cost of the over-all operation.

DUN-RITE GAGING MACHINE—For accurate gaging. It gages the tie plate instead of the rail.

SPIKE HAMMERS—For driving spikes . . . fast, straight, accurately.

POWER TRACK WRENCHES—All bolts in old rail quickly removed with power wrench.

ADZING MACHINES—Provides level tie seats, all in same plane . . . a must for quality workmanship.

TRACK WRENCHES—Bolts of new rail tightened with controlled, uniform torque.

RAIL DRILLS—For high speed drilling of bolt holes in closure cuts, as well as at switch heels, guard rails, etc

1 2 3 4 5 CRANE HERE 6 7 8

Use NORDBERG *"Mechanical Muscles"* to do a Better, Faster Maintenance Job at Lower Cost . .

*Copyright, 1953, Nordberg Mfg. Co.

R353

ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • GANDY • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • SPIKE PULLER • TRAKGAGER • TRACK SHIFTER • DSL YARD CLEANER

NORDBERG MFG. CO., *Milwaukee, Wis.*

NORDBERG MACHINERY

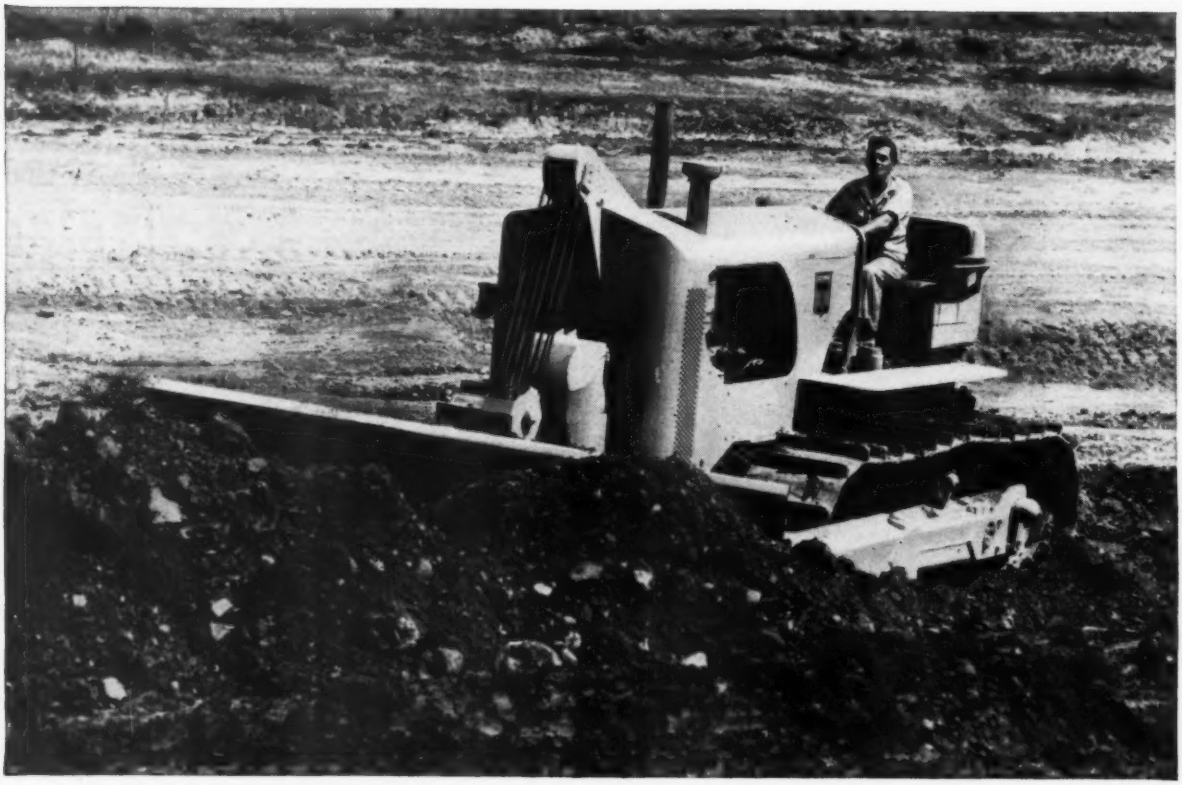
Why is the VERONA *Fixed Tension* TRIFLEX SPRING shaped like this... ?

...because this design provides a simple means of *establishing and maintaining uniform bolt tension:* there is a smooth contact area between nut and spring; the spring *will not turn* with the nut and there is wider distribution of bolt stress to the angle bar. Careful heat treatment *controls fixed tension* to less than 5% variation and gives it the *highest reaction of any spring washer.*

THE WORLD'S FINEST SPRING WASHER

Woodings-Verona
TOOL WORKS
VERONA, PA. • CHICAGO, ILL.

Owners' pride . . . Operators' delight
the NEW OLIVER "OC-18"

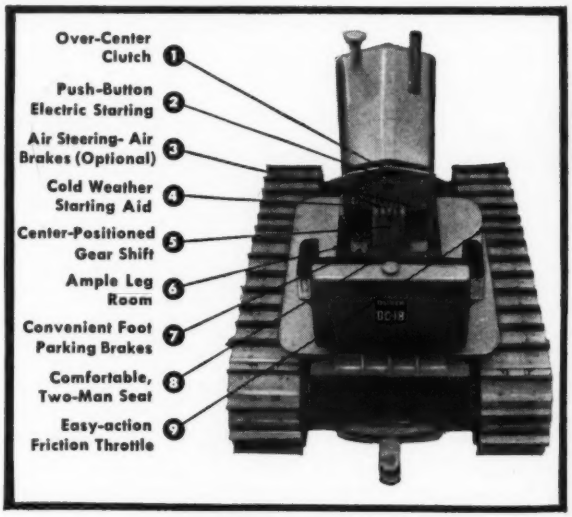


OWNERS can't say enough good things about the new Oliver "OC-18." They keep telling us how it does more work . . . how that full 133* drawbar horsepower gives it plenty of power for the really tough jobs . . . about its low operating and maintenance costs . . . and how the operators and mechanics like it.

OPERATORS are even more enthusiastic. It's the first big tractor they've found that is designed to make life easier for them. They tell us that toward the end of a long day on the "OC-18," they are much less fatigued, much more fit to continue giving top performance. The illustration shows clearly the 9 important "easy operating" features of the "OC-18." No other tractor boasts all these. They make the "OC-18" "the operators' dream come true."

Ask your Oliver Industrial Distributor to arrange a demonstration. Or if you prefer, write to The Oliver Corporation, 400 W. Madison St., Chicago, Illinois.

*OFFICIAL NEBRASKA TEST NO. 489


Over-Center Clutch 1
Push-Button Electric Starting 2
Air Steering- Air Brakes (Optional) 3
Cold Weather Starting Aid 4
Center-Positioned Gear Shift 5
Ample Leg Room 6
Convenient Foot Parking Brakes 7
Comfortable, Two-Man Seat 8
Easy-action Friction Throttle 9

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Ill.

A complete line of industrial wheel and crawler tractors

There is only one like this

There is only one Rust-Oleum

RUST-OLEUM®

STOPS RUST!

Specify Genuine Rust-Oleum
Accept No Substitute

The *exclusive* Rust-Oleum formula was developed by a Master Mariner during more than 20 years of combating the terrible rust-producing conditions of the sea. It incorporates a *specially-processed* fish oil vehicle that *dries*, is *odor-free*, and is formulated in *many colors*. It may be applied directly over *sound rusted surfaces* after scraping and wirebrushing to remove rust scale and loose particles. See why nearly every type of industry in the world has relied upon Rust-Oleum for over a *quarter century*. Clip the coupon to your letterhead and mail today.

RUST-OLEUM CORPORATION
2546 Oakton Street, Evanston, Illinois

Rust-Oleum Corporation
2546 Oakton Street, Evanston, Illinois

Gentlemen: I am interested in the complete Rust-Oleum story. Please send me the facts and the name of my nearest Rust-Oleum Railroad Rust Prevention Specialist.

Name_____

Address_____

City_____ State_____

1,000,000

INDUSTRIAL ENGINES

built in ONE year

It's a new world production record — never before accomplished. For 33 years BRIGGS & STRATTON has been establishing a long list of firsts. And now, in 1952, another is added.

BRIGGS & STRATTON is recognized as the pioneer and the leader in its field . . . setting new standards, year after year in engineering, in design, in engine performance and in precision mass production.

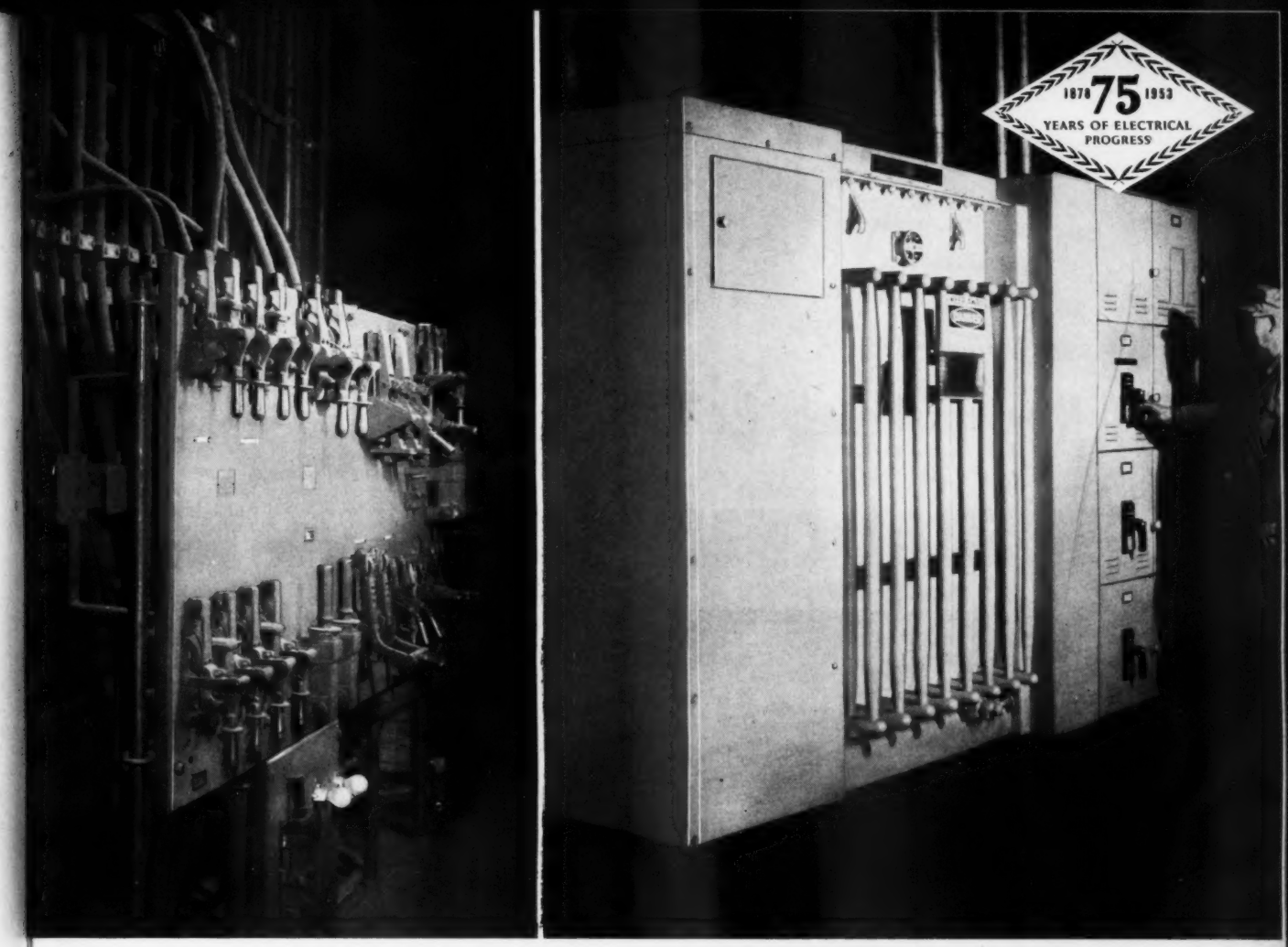
Whether you are a manufacturer, dealer or user of gasoline engine powered equipment — you are assured of top performance when you specify BRIGGS & STRATTON 4-cycle, single cylinder, air-cooled engines. They are the "preferred power" value all over the world.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U.S.A.

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

BRIGGS & STRATTON 4-cycle, single cylinder, air-cooled engines are available from ¾ to 8¼ hp. — in many models and types. They are preferred power for hundreds of types of machines, tools and appliances. All are backed by a world-wide service organization, factory supervised, unequalled in the industry.

In the automotive field, too, Briggs & Stratton is the recognized leader — and the world's largest producer of locks, keys, and related equipment.



Obsolete switchboard equipment and open framework have been replaced by modern metal-enclosed G-E load-center unit substations.

Nickel Plate Road Speeds Modernization With Compact G-E Unit Substations

The Nickel Plate Road, Brewster, Ohio—two compact G-E 300-KVA load-center unit substations are helping the Nickel Plate modernize its locomotive repair shop here. The Nickel Plate replaced its old open-type switchboard with compact G-E unit substations located near the center of the load. These new substations saved valuable floor space for the Nickel Plate and eliminated nearly 3 tons of low-voltage cable.

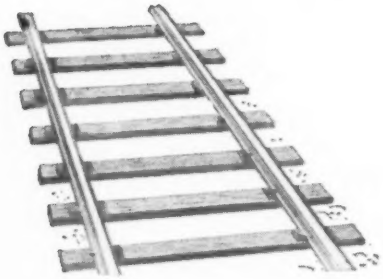
G-E substations are easily installed. They arrive in two or three sections, ready to bolt together and connect to power and feeder cables.

By installing G-E unit substations in your operations, you too can gain important savings by minimizing voltage spreads throughout your shop, and reducing motor heating, lamp burnouts, and speed variations in your machine tools.

Investigate today the economy and improved service that metal-enclosed G-E substations can give your railroad installations. For further details, consult your nearest G-E representative. General Electric Company, Schenectady 5, N. Y. 152-59

You can put your confidence in—

GENERAL ELECTRIC



Now! Exclusively for Railroads!

GENERAL CHEMICAL'S

Rite-o-way* BRAND

TCA-CHLORATE

and other

Weed Control Chemicals

NO ONE CHEMICAL can be a "cure-all" for the widely varying weed problems encountered by railroads from coast to coast. That's why General Chemical has developed its *Rite-o-way Brand* of weed killer formulations especially for railroad use.

THIS GROUP OF weed control chemicals is the outgrowth of General Chemical's long experience and extensive background in handling individual railroad weed control problems. One of General Chemical's most recent developments is Rite-o-way TCA—CHLORATE. This product contains a special high-strength formulation of sodium trichloroacetate and sodium chlorate—a combination that is now widely recognized as the outstanding all-purpose weed control material.

LET US TELL YOU MORE about General's Rite-o-way Brand weed killers . . . and how General Chemical's proven weed control program has achieved outstanding results for leading roads. A confidential conference with a General Chemical weed control specialist will show you how to take full advantage of General's "customized" weed control program for 1953. For further information, write to the address below.

*General Chemical trade-mark

GENERAL CHEMICAL WEED CONTROL

Weed Killer Department

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Following are General Chemical's Rite-o-way Brand Weed Killers. One or more of these can provide the right combination to give outstanding weed control results for your road. Investigate today!

TCA-CHLORATE
Special High Strength Formulation

Contains a special high-strength formulation of sodium trichloroacetate and sodium chlorate, now widely recognized as the outstanding all-purpose weed control material. Provides maximum root control for perennial weeds and grasses. Most effective when applied in post-frost and pre-frost months (early spring and late fall). Mid-summer treatments may be used for control of annual growth and perennial seedlings.

FORMULA 7
(TCA, Acid in an Oil Base)

For general purpose grass control. Used with diluting oil and one of the additives listed for over-all control of weeds.

FORMULA 7
(with 2,4-D)

Combines maximum contact "knockdown" of heavy foliage and residual control of root crowns, providing long-lasting suppression of regrowth. Used with diluting oil where grasses predominate, but includes sufficient 2,4-D to control moderate infestations of broad-leafed weeds.

FORMULA 7 B-D

Used with diluting oil for control of very resistant weeds and grasses. The amount of 2,4-D has been increased and fortified by pentachlorophenol.

SODIUM TCA
(Liquid Concentrate)

For control of noxious grasses. For all-purpose weed control when used with sodium chlorate or one of the 2,4-D additives listed.

EMULSIBLE AROMATIC OIL

Low cost contact weed control for temporary clearance of seedling growth and as interim treatment between seasonal applications for perennial root control.

2,4-D AMINE ADDITIVE

Used simultaneously with Formula 7 or mixed with Sodium TCA for all-purpose weed and grass control.

2,4-D ESTER ADDITIVE

For use with Formula 7 where cotton or other plants susceptible to 2,4-D are not adjacent to treated area.

2,4-D—2,4,5-T ESTER
Brush Killer (Water Soluble)

Clean Quick Shave on the New York Central

International power maintains right-of-way in top condition

International's Super A, pictured going at it, mows along the NYC's right-of-way. It is cutting finger-thick hardwood saplings while traversing rough ground.

And it's doing a job of right-of-way maintenance quickly, easily and at lower cost.

If you want to shave maintenance costs, see your International Industrial Distributor today. Get the facts on putting International power to work for you.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

MOWS 'EM DOWN. International's Super A Tractor and matched mower cuts a five-foot swath at 2 to 5 m.p.h. depending on terrain.

POWER THAT PAYS

INTERNATIONAL HARVESTER

INTERNATIONAL

Matisa TAMPING

the new standard of track maintenance

IT DOESN'T ➧ POUND — IT *COMPRESSES*
IT DOESN'T ➧ PULVERIZE — IT *VIBRATES*
IT DOESN'T ➧ DISTURB — IT *COMPACTS*

Matisa *precision* tamping adds up to:
Leadership in the field in 1952!
LET US SEND A FIELD REPRESENTATIVE TO GIVE YOU DETAILS

MATISA EQUIPMENT CORPORATION • 224 S. MICHIGAN BLVD., CHICAGO 4, ILL.

Matisa

NEWS NOTES...

...a resumé of current events throughout the railroad world

FEBRUARY, 1953

Preliminary figures indicate that the passenger-fatality rate on the railroads in 1952 will be about 0.045 per 100 million passenger-miles, according to William T. Faricy, president of the Association of American Railroads. This would make 1952 the safest year on record for railway passengers. The safest previous year was 1949 when the passenger-fatality rate was 0.08 per 100 million passenger-miles. Official figures released by the Civil Aeronautics Administration indicate that the railroads in 1952 were 10 times as safe as the air lines.

•

A prediction that the transportation industry of the country will be called upon to handle a 29 per cent greater load in 1961 than it is handling today was made by Chester H. Lang, vice-president of the General Electric Company, in a recent address. He believes the country is "in for the greatest period of expansion and industrial growth in its history."

•

If transportation, "conducted under private ownership and in the public interest," is worth preserving, "it is worth fighting for and it deserves and needs the continuing work of American businessmen, if only in their own self interest," William White, president of the New York Central, said at the annual meeting of the Transportation Association of America at Chicago on Janury 15.

•

Class I railroads in the first eleven months of 1952 had an estimated net income of $678 million compared with $567 million for the corresponding period of 1951. Net railway operating income for the two periods was $964 million and $832.1 million, respectively. These figures were released by the Bureau of Railway Economics of the Association of American Railroads.

•

Brake trouble was thought to be the cause of an accident on January 15 when a Pennsylvania train, the "Federal," ran through the gate at Union Station, Washington, D. C. The defective condition was known sufficiently in advance to permit the passengers in the train, as well as persons in the station, to be warned of the impending crash. The train overran the bumping post and proceeded across the concourse before breaking through the floor. A number of persons were injured but there were no fatalities.

•

General Motors Corporation has agreed to design and build, at its own expense, the diesel locomotive for "Train X," a lightweight, streamlined train of special characteristics which is under development by the Chesapeake & Ohio. The announcement was made by President Walter J. Tuohy, president of the C.&O., in a recent address.

•

There were 607 railroad officers receiving compensation during 1951 at the annual rate of $20,000 or more, according to a compilation issued by the Interstate Commerce Commission.

NEWS NOTES (continued)

An electronic train-identification system has been installed on the Erie. The device automatically reports to the dispatcher's office at Salamanca, N.Y., the passing of trains from single-track manual block to double-track automatic territory at an unattended junction at Waterboro, N. Y., 22 miles away. This application was developed by signal engineers of the Erie in cooperation with the manufacturer, the General Railway Signal Company.

•

The Track Supply Association and the Bridge and Building Supply Association report that reservations being received show more than usual interest in their joint exhibition to be held September 14-17, 1953, at the Coliseum, Chicago, during the concurrent conventions of the Roadmasters and Maintenance of Way Association and the American Railway Bridge and Building Association. Applications received thus far indicate a demand that will require all of the space available at the Coliseum. Those interested should address Lewis Thomas, director of exhibits, Room 705, 59 E. Van Buren Street, Chicago 5.

•

Leon B. Kendall has been appointed director of the Railroad Transport Division of the Defense Transport Administration. He goes to the DTA from the Chicago & North Western where he is assistant vice-president. Mr. Kendall succeeds David E. Smucker who returned to the Pennsylvania last November, and subsequently was elected president of the Detroit, Toledo & Ironton.

•

Loadings of revenue freight on American railroads totaled 37,983,428 cars in 1952, a decrease of 2,515,574 cars, or 6.2 per cent, compared with 1951, according to the Association of American Railroads.

•

John W. Barriger has been elected executive vice-president of the New York, New Haven & Hartford. He is succeeded as president of the Monon by Warren W. Brown, who previously was vice-president in charge of traffic.

•

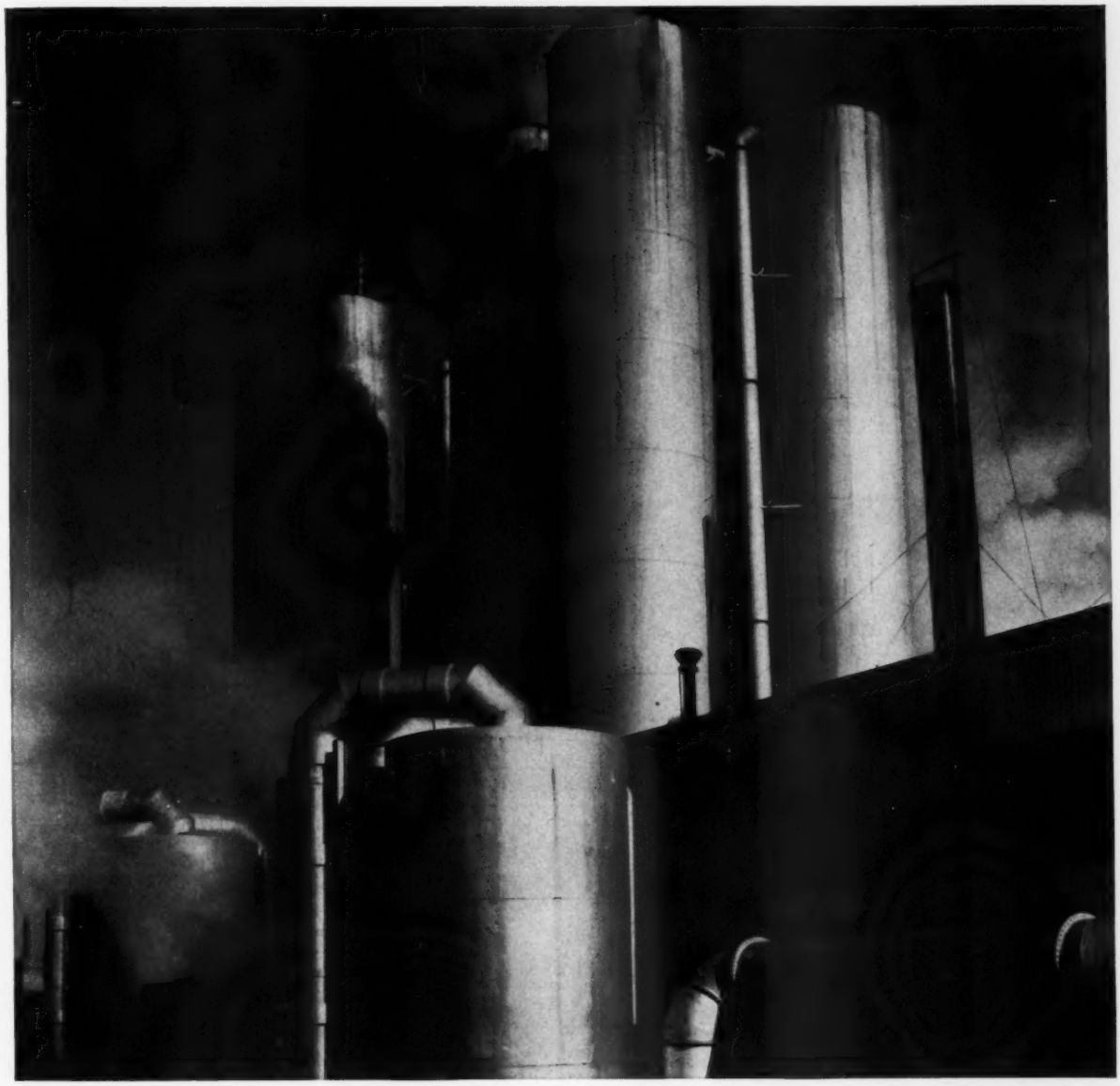
Production of new freight cars "is expected to rise during the first half of 1953, approaching 9,000 per month by June," according to the eighth quarterly report of the director of defense mobilization.

•

New connection and interchange facilities between the Pennsylvania and the New York, Susquehanna & Western in Jersey City, N. J., completed at a cost of over $1,600,000, were placed in service on January 1.

•

ALSO WORTH NOTING—David I. Mackie, vice-president and general counsel of the Delaware, Lackawanna & Western, has been appointed chairman of the Eastern Railroad Presidents Conference. This is a new full-time position. . . . George S. Douglass, 57, director of the Bureau of Valuation of the Interstate Commerce Commission at Washington, D. C., died on January 5. . . . The Missouri-Kansas-Texas, on January 2, shifted its yard operations from downtown Houston, Tex., to a newly completed yard at Eureka, a Houston suburb, where the new facilities had been built at a cost of more than $1 million.



There's a special paint for places like this and it saves hundreds of dollars

When you get down to figuring how much it costs to paint a square foot of tank or stack, you find that the paint itself is only a small part of the cost. That's why experienced paint buyers select more quality aluminum paints for jobs like this than any other type.

Because so much aluminum paint is used for these places, special formulas have been developed. Paints made to these formulas stand up longer under heat, cold, sun, rain and the kind of corrosive fumes you find around mills and factories.

We don't make paint. But we make the Alcoa Aluminum Pigments that are used in more aluminum paints than any other brand. So we want to be sure that you get full value from the aluminum paint you buy. It's just good business for us.

If you have a plant, or a stack, or storage tanks, or most anything else that needs paint that will last a long time, write us about your paint problem and we'll tell you what types of aluminum paints are best. We'll also send you a copy of *Painting with Aluminum*. It's packed with facts on selecting and using aluminum paints. Paint Service Bureau, Aluminum Company of America, 1789-B Alcoa Building, Pittsburgh 19, Pa.

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

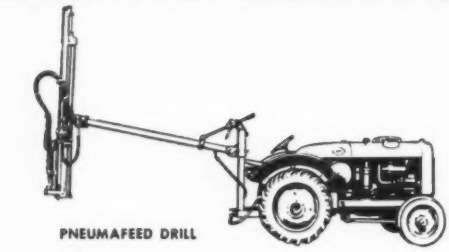
SCHRAMM'S *Versatile* *Pneumatractor*

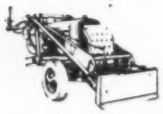
The Plus Compressor follows the work on the

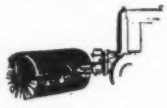
COTTON BELT ROUTE

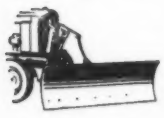
The Cotton Belt, like other roads, appreciates the *off-track mobility* of the *Pneumatractor* which makes it capable of easily following the work as it progresses. And spike driving is only one of its uses, for this 105 c.f.m. compressor supplies up to eight tampers or other tools. But that's not all the story. The addition of any of many auxiliary attachments gives it increased use on a variety of jobs.

For more details about this useful and versatile piece of equipment, write for Bulletin MR-52 today.







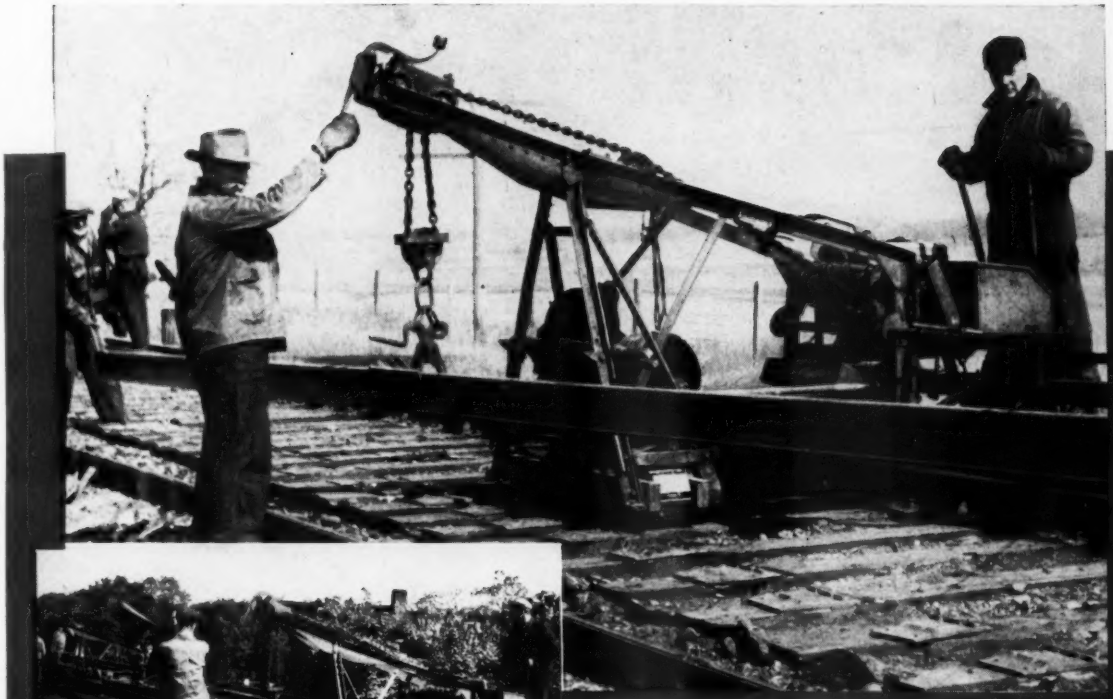


with auxiliary equipment the *Pneumatractor* does many jobs

SCHRAMM INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA



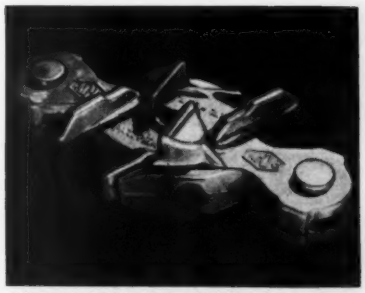
MECO
MONEY-SAVING PRODUCTS

Meco Type C Rail Layer, which is light in weight and easy to handle, does all the heavy work of lifting and placing when relaying rail. It rides one rail of the track and relays the opposite rail.

The *Meco Set-Off and Transfer Device* then transfers the Meco to the newly laid rail and it lays the other rail. The same device sets the Rail Layer off the track to clear traffic.

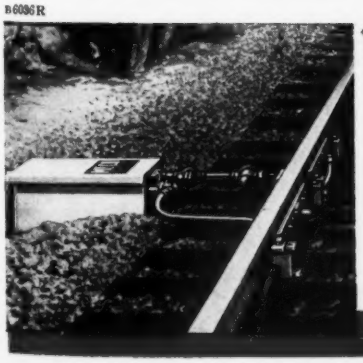
One *Meco Rail Layer* and a crew of 3 or 4 men lay conventional length rails. Long rails are handled by 2 *Mecos* and 5 or 6 men. Mile-long "RIBBONRAILS" are layed by 2 or more *Meco Rail Layers* and 6 or more men.

Maintenance Equipment Company
RAILWAY EXCHANGE BUILDING • CHICAGO 4, ILLINOIS



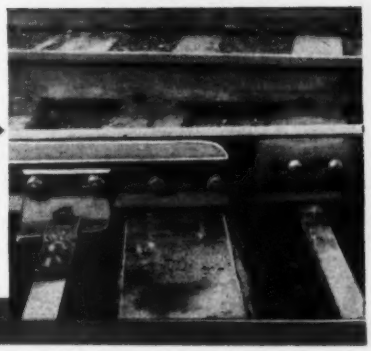
RYD-IN AUTOMATIC COUPLER for securely coupling motor cars and trailers.

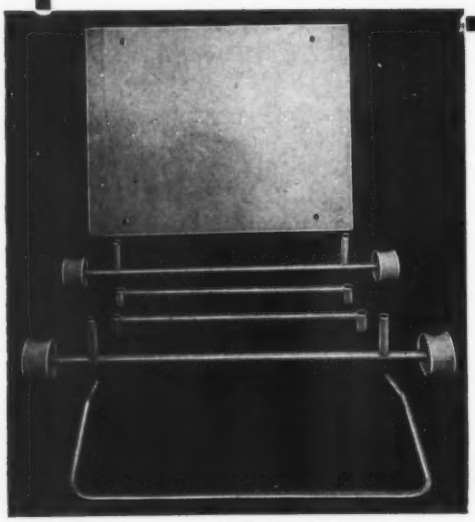
B-6036-R



MECO CURVE RAIL LUBRICATOR — The *Meco Curve Rail Lubricator* greatly decreases wheel flange and rail friction on curves, thus increasing the life of the high rail, reduces wear on wheel flanges, and makes higher speeds possible with safety.

MACK SWITCHPOINT PROTECTOR — Prolongs the life of switch rails 4 to 5 times with the first application. When the Protector wears down, it is removed and reversed, and prolongs switch rail life another 4 to 5 times — thus saving the cost of 8 or 10 switch rails and the labor cost of removing and replacing them as well as the cost of the many delays otherwise encountered because of frequent replacement of worn out switch rails.





Can be set up or dismantled in *less than a minute* for easy loading into a truck, bus or motor car. Send for bulletin #186

CONSERVE THE ENERGY OF YOUR MOBILE TRACK GANGS WITH THIS WOOLERY TRACK TOOL TRANSPORTER!

This handy, light-weight push car carries tools or welding equipment to the job site from the nearest crossing or other point where truck or bus must stop. *Men arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment—saves time—and muscles—for the important job!*

Rolls easily on anti-friction bearings even when fully loaded.

Handle can be inserted on either side for pushing in either direction.

Weighs only 160 lbs—yet will carry a thousand pounds of tools or materials! This is due to the novel steel-reinforced weather-proof plywood deck construction. *Light—but amazingly strong!*

SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT

Woolery MACHINE COMPANY

2919 COMO AVE. S. E. MINNEAPOLIS 14, MINN.

Manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

Exclusive Export Representatives
PRESSED STEEL CAR CO., NEW YORK, N. Y.

6 MORE REASONS for Nalco COMPLETE WEED and BRUSH CONTROL

Nalco Spray Cars, engineered to give precision chemical dosage and coverage, are added good reasons for using safe, powerful Nalco weed and brush control chemicals on your right-of-way.

Several Nalco formulas are available . . . specifics for grasses, weeds, annuals or perennials, and Nalco spray cars are equipped to spray two formulas simultaneously, when necessary, in correct proportions for effective control. Spray cars, each with precise metering and indicating equipment, are available without charge to railroads using Nalco weed control chemicals in tank car lots.

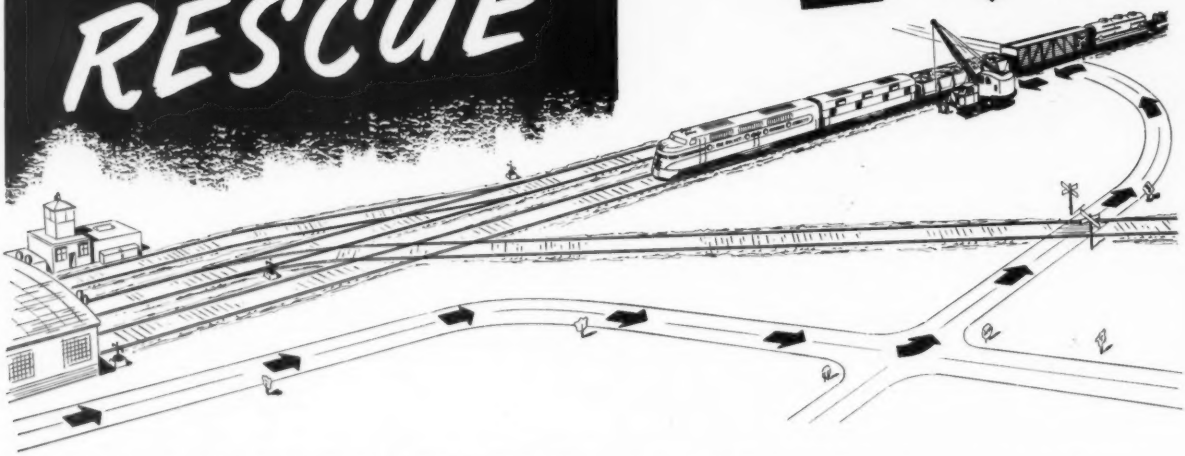
Write for data on spray car availability and Nalco chemicals to keep your right-of-way free of weeds and brush.

NATIONAL ALUMINATE CORPORATION
6191 West 66th Place • Chicago 38, Illinois
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

THE Nalco SYSTEM • Serving Railroads through Practical Applied Science

Six Nalco Spray Cars shown above have all gone into service within the past two years. Modern design, equipment and instrumentation assure maximum spraying control and labor-saving efficiency.

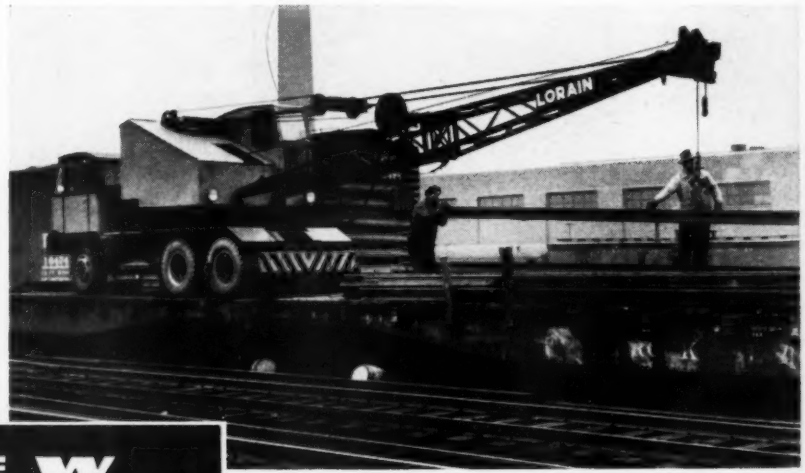
LORAIN to the RESCUE on the Rock Island



A 15-ton Lorain Moto-Crane, Model MC-254, has revamped hot box emergencies on the Rock Island road, Chicago Division, Blue Island, Illinois. When there is trouble on the right-of-way, even 25 to 30 miles away, the Moto-Crane hits the highway at fast speeds (see diagram), cuts into the right-of-way off the nearest road and reaches the scene in record time. The Lorain Moto-Crane method replaces former steam crane equipment that required engine and crew, not to mention right-of-way clearance and schedule difficulties. Two men and the Moto-Crane do the job, no train crew is needed. Imagine the savings in men, time and dollars. For more proof, contact one of the more than 125 Lorain distributor headquarters, located in principal cities across the nation.

OTHER USES ON THE C. R. I. & P.

Here, the Rock Island Lorain Moto-Crane is working on a flat car, unloading rail on the right-of-way. According to Mr. John Nolfe, Roadmaster, the Lorain is used on-the-car and off-the-car, to unload ties, rail, to clean the cinder pit at the round house, to pick up scrap, plus a multitude of other general uses. This is their first crane on rubber . . . and they keep it busy every day. It is used both as a clamshell for material handling and as a crane for loading, lifting, unloading operations.



THEW LORAIN

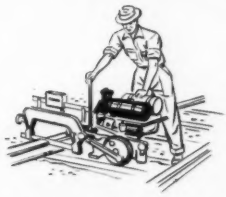
Lorain cranes on rubber are available in capacities up to 45 tons — the world's largest crane on rubber. Also, available on crawler mountings . . . plus 5 interchangeable front-end types for any material handling need. Write for complete catalog on the Lorain line.

THE THEW SHOVEL CO., Lorain, Ohio

YOUR EXTRA EMPLOYEE THAT WORKS WITHOUT PAY

RACINE *Portable* RAIL SAW

- CROP RAIL IN TRACK
- WILL NOT SHATTER OR BURN RAIL ENDS
- CUT OFF ANY LENGTH DOWN TO 1/10"
- NO TRAFFIC INTERFERENCE



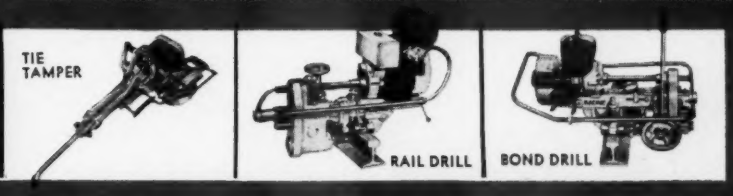
One man operates the RACINE Portable Rail Saw while it does the work of several hands. Designed specifically for cutting rail in track, it handles the job fast and dependably.

Cuts are smooth and accurate. Shattered and burned rail ends are eliminated. The possibility of rail failures from fractures that start with torch cutting or "nick and break" cropping is reduced.

Easily moved by two men, it does not hamper traffic. Operation is simple. Maintenance cost is low. Here is an "extra employee" you can rely upon for steady output under all conditions.

Write for new, 3-color catalog describing RACINE Railway Maintenance Machines.

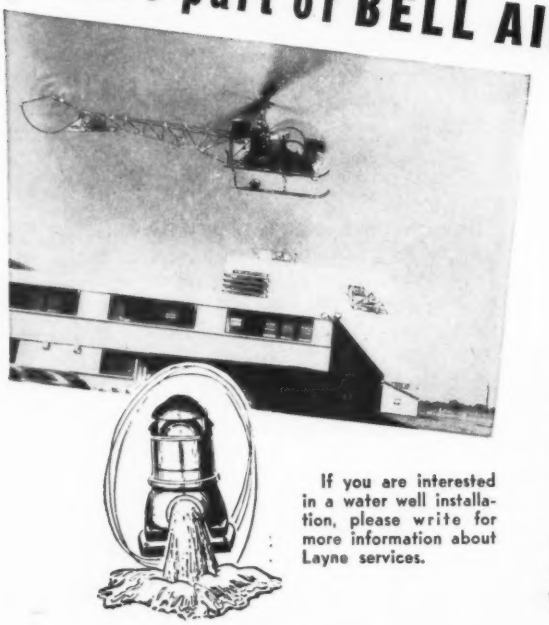
OTHER RACINE PORTABLE MACHINES



RACINE HYDRAULICS & MACHINERY, INC.
2038 Albert Street • Racine, Wis.

LAYNE WATER WELLS

. . . are part of BELL AIRCRAFT'S amazing growth



If you are interested in a water well installation, please write for more information about Layne services.

One of America's most interesting sagas of industry, is the amazing growth of Bell Aircraft Corporation's Helicopter Division at Hurst, Texas. From this great plant Bell "eggbeaters" have gone to all parts of the world—both for war and peacetime service.

When Bell Aircraft selected a site for their big Texas plant, they immediately ordered the installation of a complete Layne Water Supply System. Today that single Layne installation is more than fulfilling all water supply needs for both manufacturing and employees—and apparently can continue to do so for many years to come. Layne is happy to name Bell Aircraft Corporation as another in a long list of important industrial organizations that own Layne Water Wells and Pumps.

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

Layne

Without obligation Layne will be glad to provide a complete file of late catalogs and literature on modern water supply wells and high efficiency vertical turbine pumps.

WATER WELLS
VERTICAL TURBINE PUMPS
WATER TREATMENT

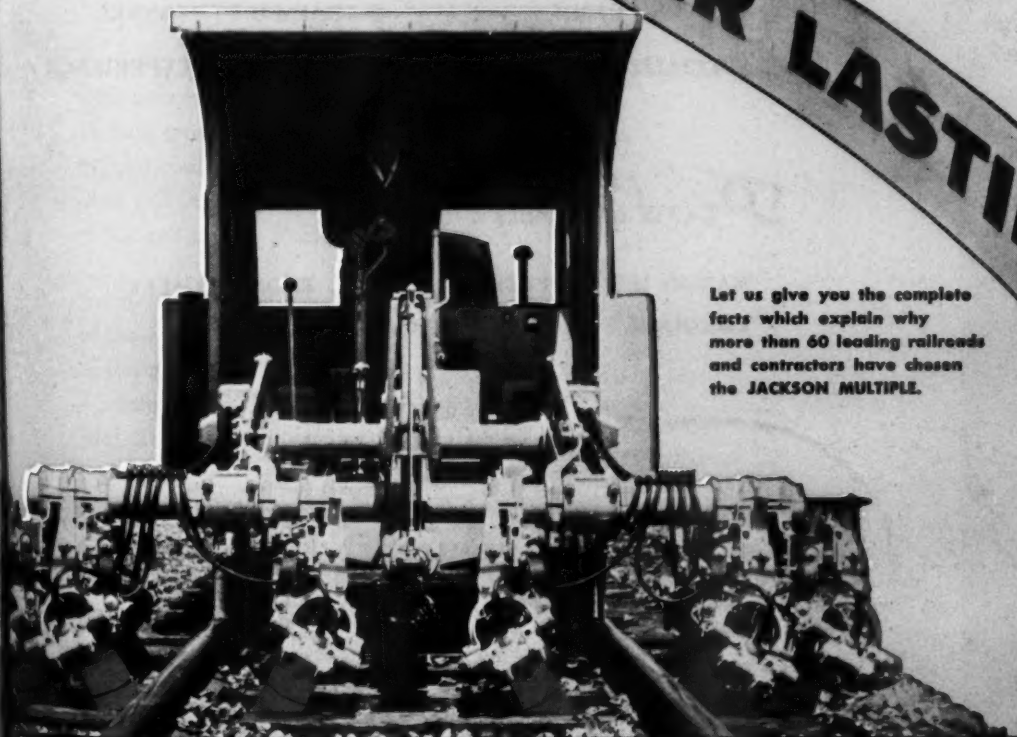
THE PERFECT BUILD UP

IS PROVIDED WITH THE JACKSON MULTIPLE

THE *ONLY* ON-TRACK MACHINE THAT TAMPS THE VITAL SPOT

Obviously, track which has thoroughly consolidated ballast directly beneath the rail — the area in which greatest stress is imposed — is bound to remain smooth, require less maintenance and last longer. In selecting your on-track tamping machines, it is well to bear in mind that the JACKSON MULTIPLE is the ONLY ONE that reaches and thoroughly tamps this vital spot. Furthermore, in any lift, ranging from that which is slightly less than the average size of ballast used, to the very highest, JACKSON MULTIPLES will give you perfect track at unprecedented low cost per mile . . . in one operation regardless of type of ballast used.

FOR LONGER LASTING TRACK



Let us give you the complete facts which explain why more than 60 leading railroads and contractors have chosen the JACKSON MULTIPLE.

MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH

SOLD IN U.S.A. *by* **ELECTRIC TAMPER & EQUIPMENT**
LUDINGTON, MICHIGAN

Complete BRUSH and WEED KILLING SERVICE

PIONEER in the improved right-of-way brush control

Spraying equipment specifically designed and proven for the purpose

LEADER in effective grass and weed killing control

TCA • OILS • 2, 4-D
• PENTACHLOROPHENOL
• BRUSH KILLERS

For Your Railroad . . .

- **PROVEN CHEMICALS**
- **TRAINED PERSONNEL**
- **SPECIALIZED EQUIPMENT**
- **RECOGNIZED EXPERIENCE**
- **INSURED RESPONSIBILITY**

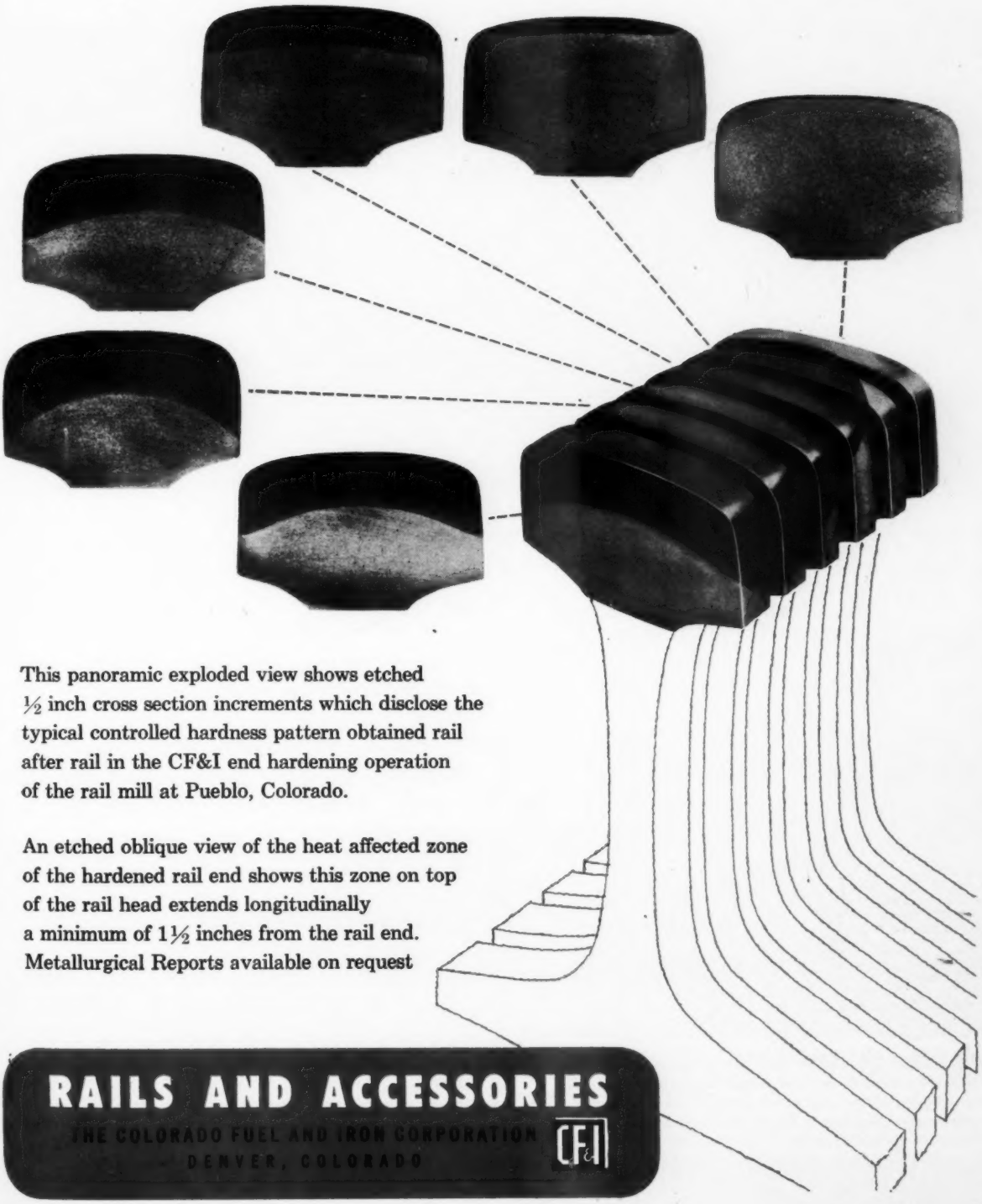
Producing . . .

MAXIMUM VEGETATION CONTROL ECONOMICALLY THROUGH EFFICIENT OPERATION

Spray Services *Incorporated*

Pioneers in Right-of-Way Spraying
P. O. BOX 5444 HUNTINGTON, W. VA.

CF&I MILL END-HARDENED RAILS



This panoramic exploded view shows etched ½ inch cross section increments which disclose the typical controlled hardness pattern obtained rail after rail in the CF&I end hardening operation of the rail mill at Pueblo, Colorado.

An etched oblique view of the heat affected zone of the hardened rail end shows this zone on top of the rail head extends longitudinally a minimum of 1½ inches from the rail end. Metallurgical Reports available on request

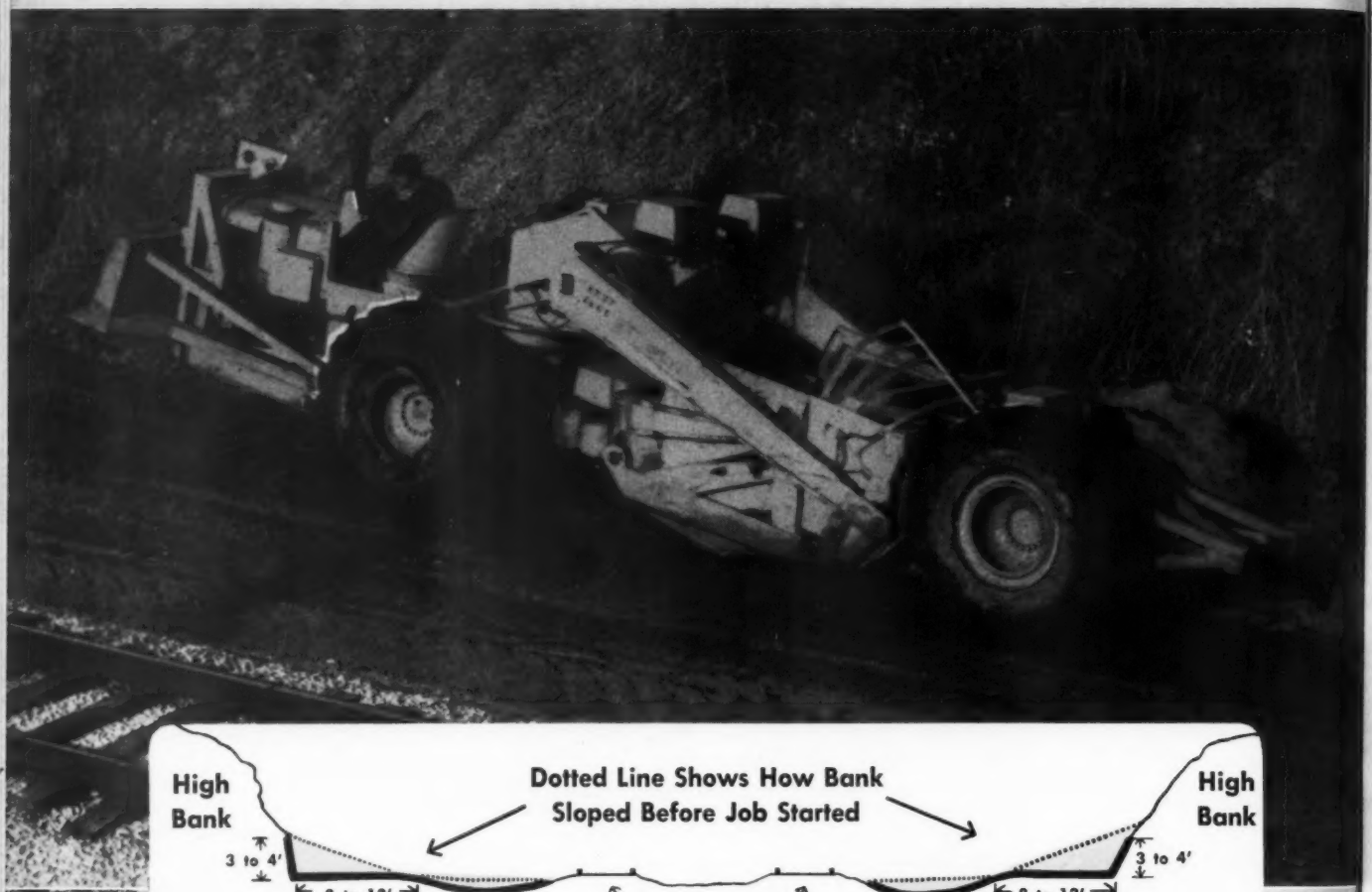
RAILS AND ACCESSORIES

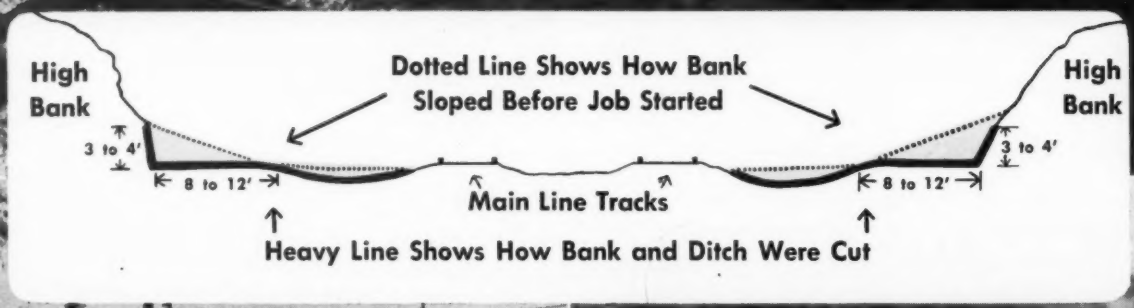
THE COLORADO FUEL AND IRON CORPORATION

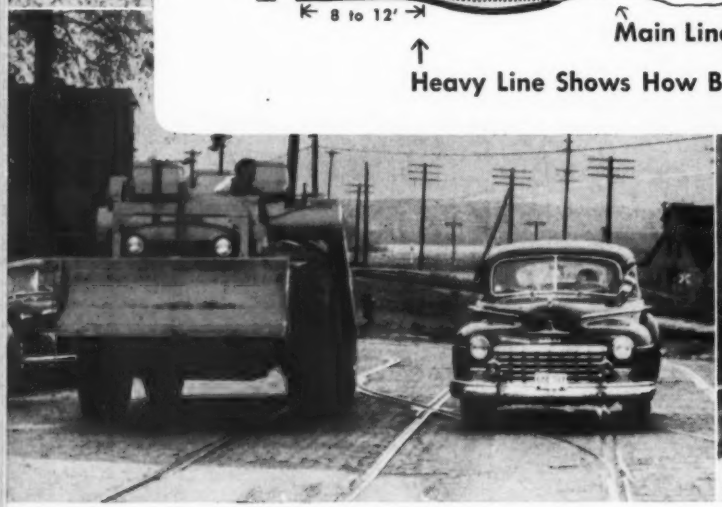
DENVER, COLORADO

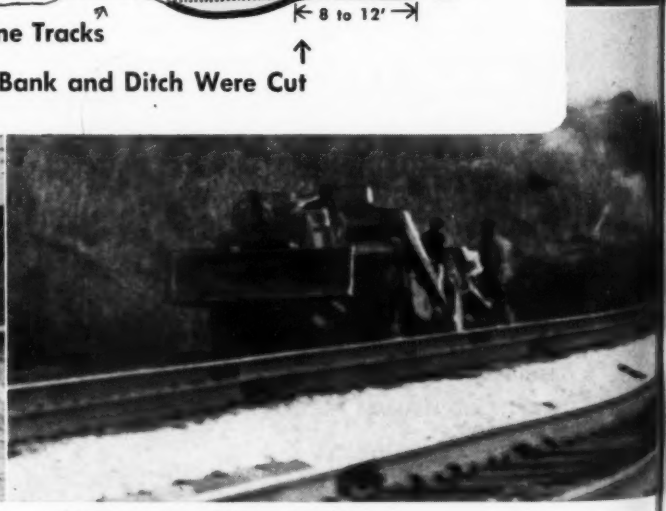
CF&I

"Best production tool




High Bank
Dotted Line Shows How Bank Sloped Before Job Started
High Bank
3 to 4'
8 to 12'
Main Line Tracks
8 to 12'
3 to 4'
Heavy Line Shows How Bank and Ditch Were Cut





Tournapull takes shortest route between jobs at fast 28 m.p.h. clip. Travels via highway or down right-of-way . . . goes right to work with no unloading delays. This greatly simplifies dispatching . . . speeds emergency service anywhere in the Division. In winter, "D" mounts V-type Snow Plow to open yards, sidings, loading tracks, access roads.

Fast moves from track are easily made at the approach of traffic. In less than a minute after line is clear, "D" can be back on the job digging, cleaning ditches, spreading ballast, widening embankments, relocating grades. Low-pressure 18.00 x 25 tires flex over rails without damage to machine, tires, ties or track.

LETOURNEAU LET EQUIPMENT

R. G. LeTourneau, Inc.

PEORIA, ILLINOIS

ol we have . . . "

reports Job Superintendent on main line ditching for large western, Class 1 railroad

Versatile D Tournapull continues to receive enthusiastic praise from rail officials in charge of right-of-way maintenance. One large western, Class 1 railroad recently put their rubber-tired D Tournapull railroad "handyman" to work maintaining banks and opening up drainage ditches along main line tracks. After a full season's operation, "D's" excellent performance drew praise from the job superintendent who reported, "Tournapull is the best production tool we have. It really moves yardage, especially on long hauls."

Excavates . . . hauls . . . spreads

In speeding the improvement program, the "D" demonstrated its unusual ability to work under difficult conditions. Material excavated was generally wet, sticky, soft clay and gumbo. Work area was very confining, requiring short, tight turns every load. Round trip hauls from cut to wasting areas averaged 700′ at this particular location. In several instances, "D" had to haul 75′ up a 25% grade . . . dump on the run, then return down the steep grade. Despite these adverse conditions, Tournapull was 100% efficient in over 900 hours of operation . . . easily handled bank and ditching assignments, plus day-lighting road crossings along 50 miles of right-of-way — all in one season!

Tournapull's mobility and speed are important factors in simplifying maintenance scheduling. One man and Tournapull can be on a job 28 miles away in an hour. Units take most direct route . . . via highway, down or across tracks . . . work alone, or push-load each other in pairs. Their work capacity and operating flexibility improve maintenance, eliminate delays in rail traffic, high cost of work train services, and headaches of dispatching and supervision. Getting work done faster, easier, with less manpower is a habit with Tournapulls. We'll be glad to show you how they do it. Write us for more information, or for a demonstration on your division.

Working in confined areas is made easy by "D's" ability t turn 90° left or right. Steering and scraper operations are controlled fro electric dashboard switches. This simplifies training . . . improves safet Big 4-wheel, disc-type air brakes (2,822 square inches, total brakin surface) are also important safety-first assets for tight quarters.

Wasting at fill, "D" often had to climb 25% grades . . . drov through wet, spongy clay, then spread its load on the run. Big tires electric power steer, plus Tournamatic differential, enabled Tournapul to make fast get away and return to track-level ditch. Optional electrical ly-controlled dozer blade does odd job emergency dozing.

Big 9-ton, 7-yard capacity bowl is unloaded in seconds . . load can be spread in even layers 1″ to 26½″ thick or piled in one place Electric-control tailgate cleans bowl thoroughly for capacity load next trip Large square top opening allows fast, easy loading of ballast or othe material from hopper, clamshell or shovel.

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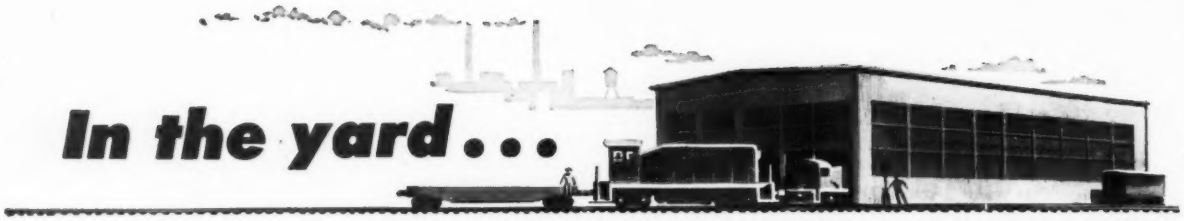

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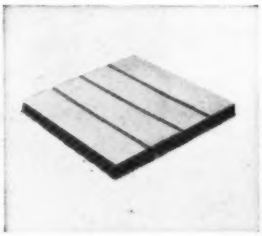

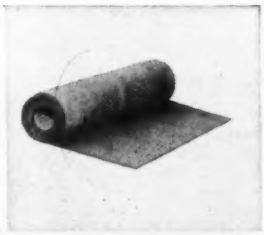

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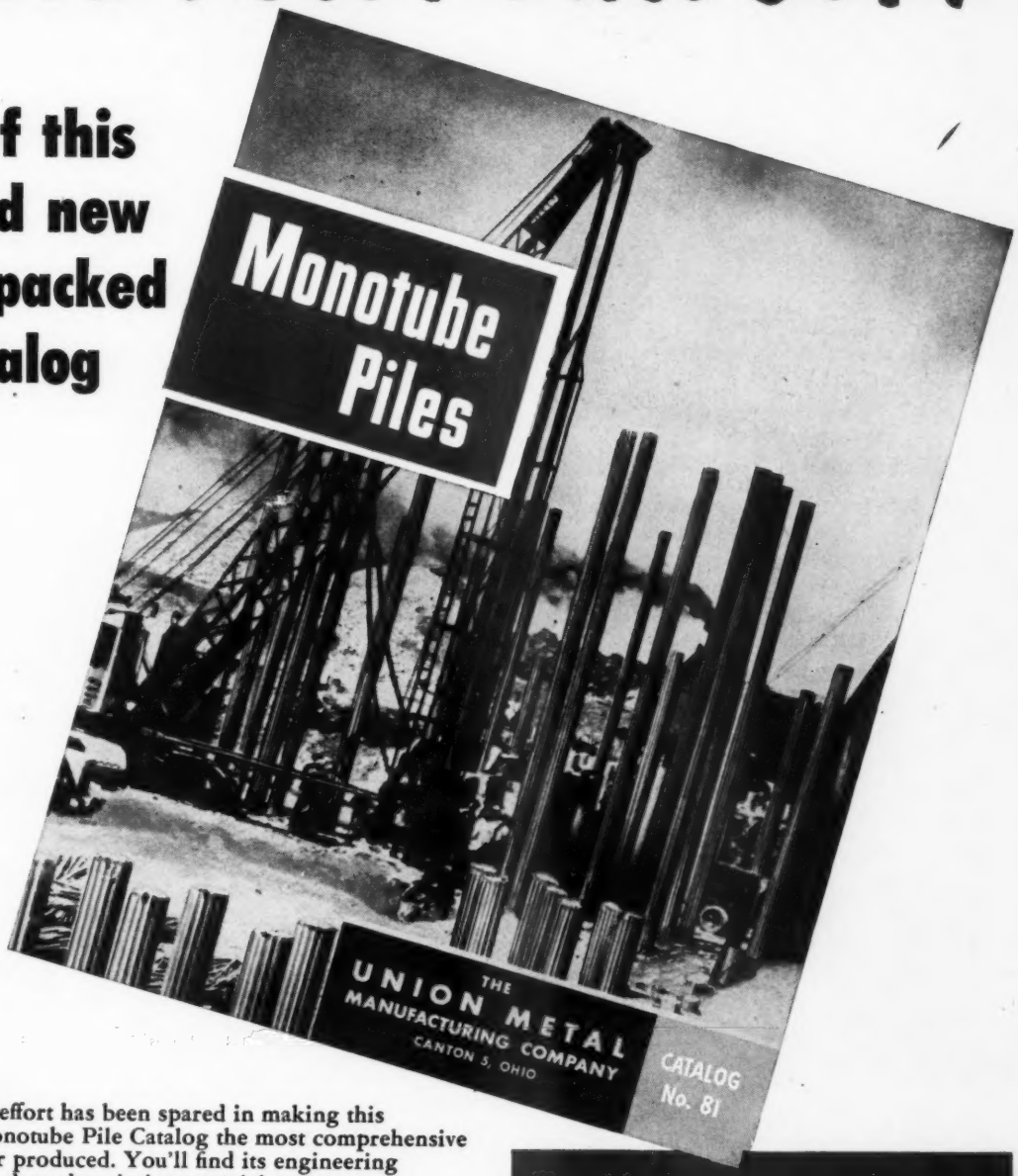

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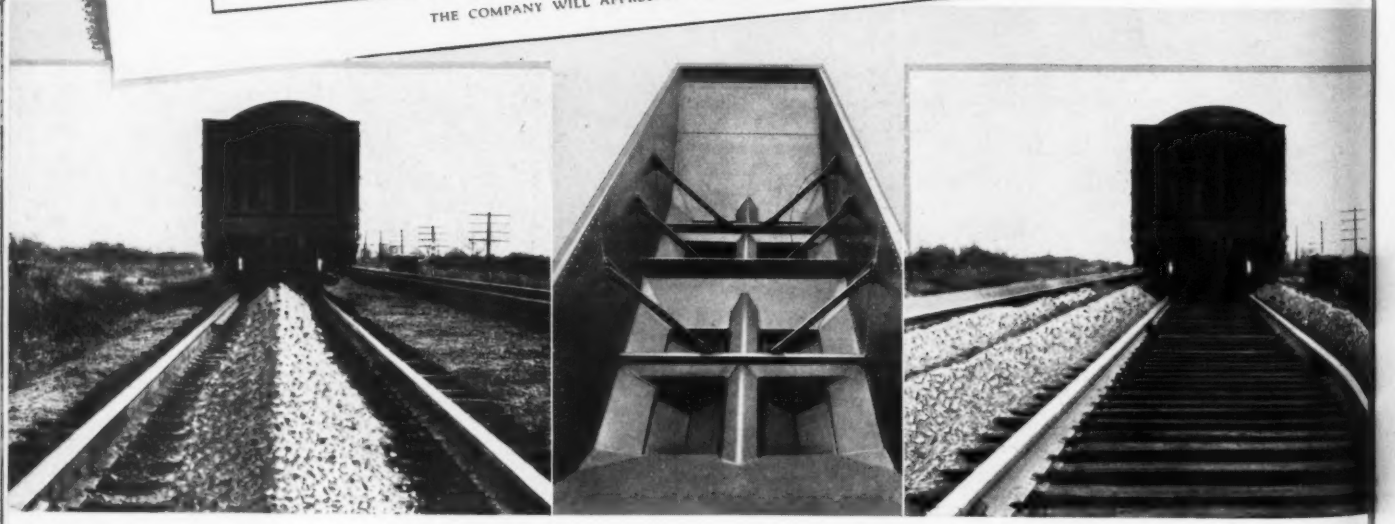

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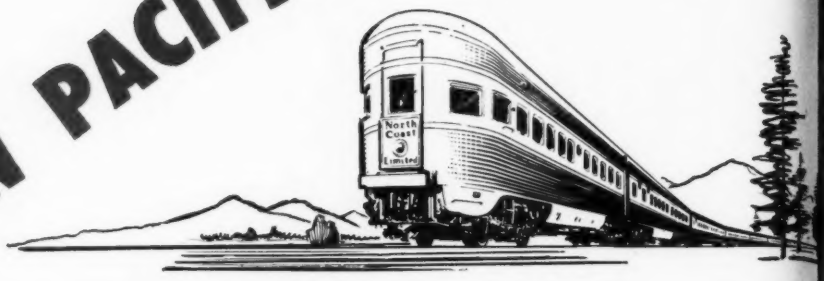

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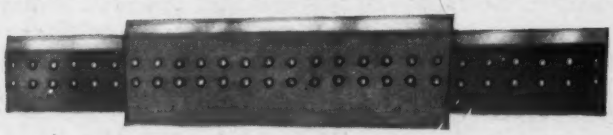

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Subject: Railroad Men as Writers

February 1, 1953

Dear Readers:

You have noticed, I am sure, that the majority of the feature articles appearing in this magazine are presented without by-lines. This means, in most cases, that they have been written by members of the staff. Writing such articles is our business; that, at least in part, is what we are paid for. On the other hand there are occasions when, for one reason or another, we endeavor to get our railroad friends to prepare articles for us. I am sure you will be interested in knowing something about our experience in this regard.

We have found that many railroad men resist the idea of writing articles. In the majority of cases this resistance seems to arise from a positive dislike of writing which often springs from a conviction that one can't write well and therefore shouldn't make the attempt at all. Perhaps in some instances this viewpoint can be traced to some unkind words that an English teacher may have said about a composition back in grade-school days.

More commonly than otherwise this idea of not being able to write well is an illusion. The great majority of supervisory officers have no difficulty in expressing themselves verbally when explaining a matter to a subordinate. Frequently they become positively eloquent in making such explanations. There is no reason why this eloquence should disappear when one undertakes to use the written, instead of the spoken, word. Suppose the punctuation, or the sentence construction, or the organization of facts is not letter perfect? Here again is where the editor comes into the picture. He doesn't expect that a contributed article will be in shape to send directly to the printer; he expects that at least some "smoothing up" will be necessary. He's happy just to get the facts, and he carries on from there as a routine matter.

The editors of this magazine can't possibly know of everything of interest that occurs in their field. There are certain to be developments, involving the use of new or novel methods, devices or equipment, which will go unnoticed unless they are brought to our attention by you readers. Frequently, either verbally or by letter, you take the initiative in telling us of such developments. We are deeply appreciative of this kind of cooperation, for we can then take whatever steps are necessary to get the story.

We hope that you will, by all means, continue to tell us of interesting developments. But some time you may wish to try your hand at setting down the facts in writing, just as you would tell them to another person, say an editor, if he were sitting across the desk from you. Then put them in the mail to us. Since writing is a creative activity, I am sure you will find the experience stimulating and the results gratifying when you see your creation in print.

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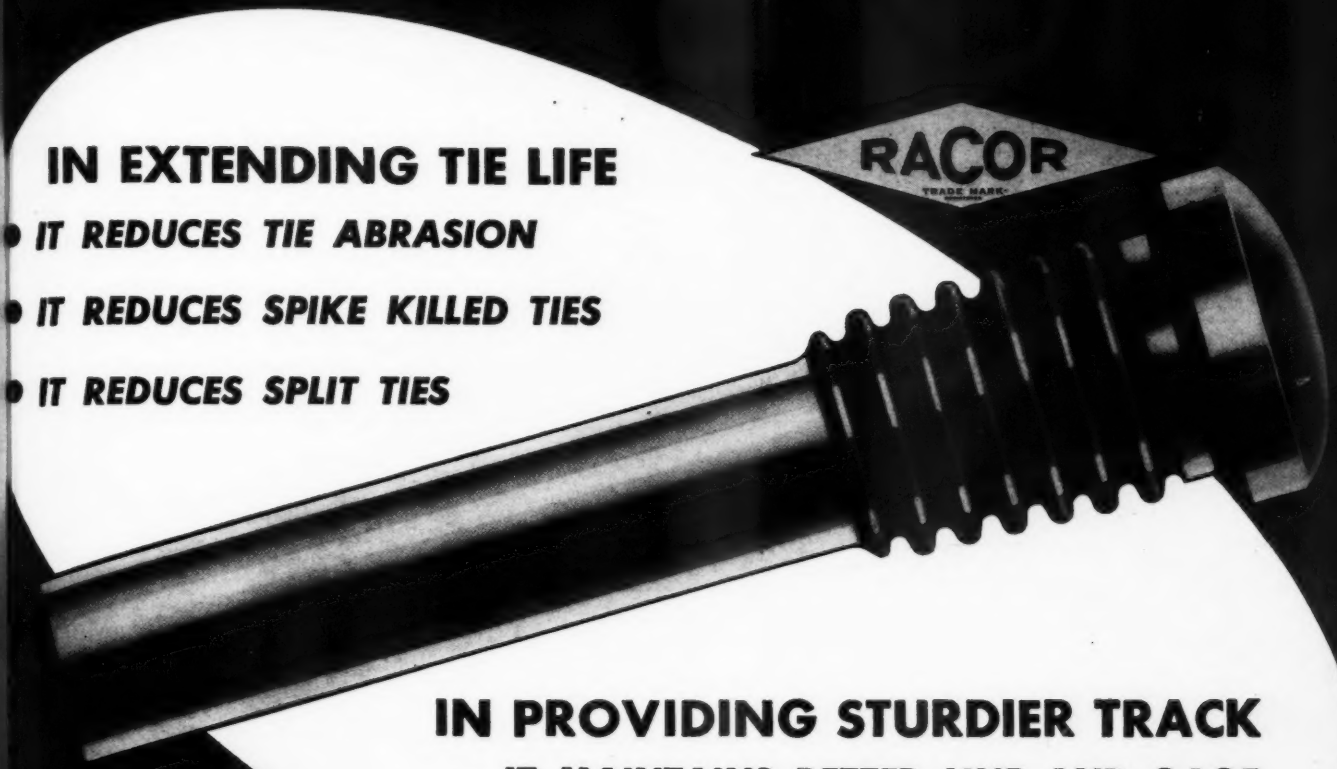

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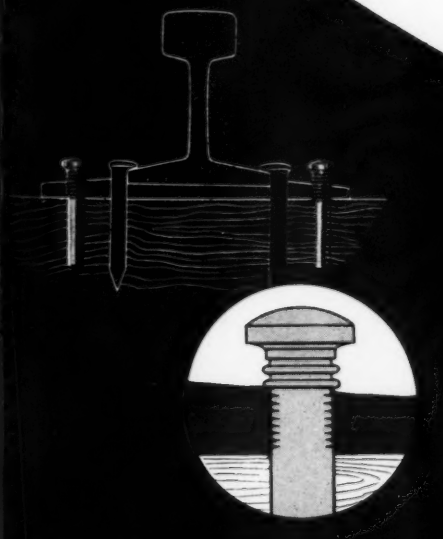

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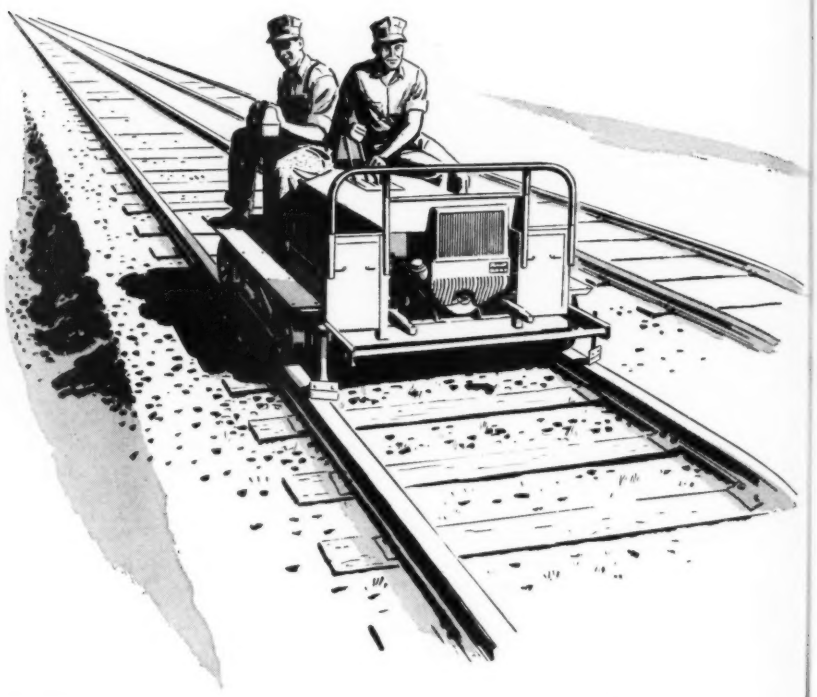

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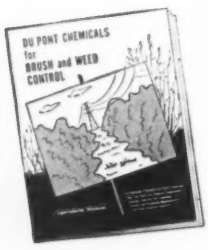

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Editorial Comment

Wage Demands —

Their Significance for M/W Officers

The nightmare of increasing labor costs continues to haunt the railroads. Right now a case is pending which holds grave implications for those departments, including maintenance of way, which employ so-called non-operating personnel. This threat is in the form of demands by 19 non-operating brotherhoods for "improvement" factor wage hikes aggregating 18 cents an hour, retroactive for three years at the rate of 6 cents per hour per year.

During hearings on these demands before a referee, railroad representatives have pointed out that, if allowed, the demands would add a half-billion dollars a year to railroad operating expenses. In opposing the demands, management representatives call attention to the fact that railroad non-operating employees have been given increases aggregating 90 cents an hour since 1944 and that this is considerably in excess of wage increases in other industries during the same period, which for instance, have totaled 78½ cents in basic steel, 77½ cents and 78½ cents in aluminum, 76 cents in automobiles, 75½ cents in rubber, and so on.

One management representative at the hearing contrasted the wage increases obtained by railroad workers with the relatively low level of net earnings of the industry, and said that this contrast affords "conclusive proof that employees have been reaping most, if not all, the benefits of the increased revenue productivity of the railroads." He might have added that the employees are reaping most, if not all, of the benefits of increased productivity resulting from technological advances, such as the use of more and better machines by the M/W forces.

It is not the intention to argue this case here. Nothing would be gained by so doing. All the facts and arguments will be brought out at the hearings, and it is on the basis of these that the referee will make his decision.

During the hearings one management witness declared that further wage increases for railroad employees would "fan the fires of inflation throughout the national economy." What the maintenance officer is more directly concerned about is the degree to which new wage increases would "fan the fires of inflation" in his own department, reducing the amount of labor that can be purchased with the dollars made available to him.

To assume that these new demands will ultimately be allowed, in whole or in part, would be borrowing trouble. But it would certainly be the better part of prudence to be prepared, in so far as it is humanly possible to do so, for the worst that could happen. To be prepared does not necessarily mean to tighten the belt further, but simply to intensify the efforts already being made to reduce costs through greater efficiency. To many, this may seem to be an impossible assignment in view of the progress already made. Certainly maintenance officers are not miracle men although it is a fact that they have accomplished the impossible before and may be asked to do so again.

Among the ranks of maintenance officers are those who hold that there are definite possibilities for further progress in putting M/W work on a more efficient and economical basis. This group includes John P. Hiltz, Jr., newly appointed chief engineer, maintenance of way, of the New York Central System. Readers will find much food for thought in an article by Mr. Hiltz, which begins on page 141 of this issue.

NEW POLICIES —

Improve Effectiveness of Machines

THE MECHANIZATION of track-maintenance work has now reached the status of big business. Not only have the railways' investments in machines mounted to large sums, but even the sizes of some individual units have grown almost proportionately as large. That very growth has created a major problem of keeping experienced operators running the machines at all times. As the size and efficiency of machines have increased, the equipment itself has outgrown the limits of the basic unit of maintenance supervision—the roadmaster's or track supervisor's territory. No longer can its use be economically confined within such narrow boundaries, but must be allowed to spread beyond, wherever the need may be.

Machines, although intrinsically efficient, are worthless without good guidance, care and operation. It is simple to move even the big machines from one territory to another, but it is not so easy to take with them the good guidance, care and operation to which they have become accustomed through daily contact with experienced machine operators who take pride in getting things done with "their" machines. For, on some roads, few operators carry visas entitling them to cross the border into another "territory." The machines may go, but they cannot. Instead, they drop off at a designated mile post or at the end of the last day's use at least, and a new man takes over. Even though the man may be the best in the new area to which the machine has been assigned, it may happen that he has never even seen a device of that type before. But being a good operator, he proceeds to run the new equipment merely by his "mechanical instinct." In all fairness to such men it must be said that they generally make the best of what many think is a poor situation. Their best, however, is frequently not good enough for some of the expensive, high-production equipment being used today. That system worked well only as long as roadway machines were small, simple and easily handled. It does not work well now when they are larger and more complicated.

What is the solution? Some railways have found that the cure rests jointly on management and labor. The one must decide exactly what is necessary and the other must remove any restrictive barriers that may be present. For each the rewards of cooperation are great. Equipment men who have studied this problem feel that an operator, once he has been qualified and assigned to a major machine by whatever rules are in force, should remain with that unit as long as it continues in use, regardless of where it works. Such operators know the machines, their capabilities, their limitations, their condition and above all treat them as if they owned them.

All those things benefit management by resulting in higher production at less cost. They benefit labor too because the operators involved are happier, have easier work, have more continuous employment at a higher rate of pay, and don't have to worry about bumping to another job when the machine has reached any particular spot on a map. Recognizing that the benefits are so great, labor and management on some roads have readily agreed to changes in previous regulations. Are they the only roads that need such benefits?

ROCK SLIDES —

May Occur at Unguarded Points

THOUSANDS of railroad cuts in this country have been excavated through rock and loose-rock formations. The chances are that most of these cuts will never cause the track forces any trouble. However, a few troublesome ones, during the next two months of alternately freezing and thawing temperatures, will require the attention of track walkers or patrolmen to prevent accident to rail traffic.

But even those cuts normally in a state of repose can suddenly break loose and precipitate tons of material down onto the tracks. Any cut having side ditches that trickle or flow with seepage waters at times when most of the other cuts are dry is a potential threat and should be regarded with mistrust, especially in the spring and fall.

Many cuts are excavated through rock formations where the stratified layers rise on inclined planes and have seams of shale through which moisture can readily percolate. These cuts also should be suspect, especially where frost action occurs, and any having shale seams that would, when projected, pass through the track area, should be carefully observed from time to time for weakness. Not long ago the loosening of a shale seam resulted in a serious derailment.

Trackmen usually will notice projecting rock out-croppings and prominent boulders on slopes, but long association with them usually dissipates any feeling of potential danger. However, repetitious cycles of freezing and thawing can ultimately bring down those that are more precariously situated. A track patrolman may report that the track was clear at the time of his inspection, but there is always a possibility that a boulder may come down shortly after the patrolman has passed. Sometimes a few sticks of dynamite can remove such hazards forever.

The next few months will be busy times for the roadmasters as they plan their work for the coming season; during this period they may be inclined to leave the observance of rock hazards to the section foremen. But the foremen also are occuppied, coping with track problems brought about by freezing, thawing and drainage, and may be inclined to overlook the danger from falling rocks and slides. For this reason, it would seem desirable for engineers, who are more qualified by training to appraise such hazards, to allocate some of their time to a minute examination of questionable rock conditions.

• Machinery
• Materials
• Money
• Management

. . . A Four-Point Program for Meeting Today's M/W Problems

*By J. P. Hiltz, Jr.**

In this appraisal of the possibilities for making the maintenance dollar go even further than it does today, Mr. Hiltz discusses the problem against the background of his experience on a road that is known for its advanced practices. This article is based on an address presented before a recent meeting of the New England Railroad Club at Boston.

• If maintenance-of-way department officers had been told in 1945 that in the next six years the cost of performing work in their departments would more than double and that they would be expected to maintain their properties in the usual manner with about the same amount of money they had used in the past, there would have been few, if any, who would have agreed that this could be done. Yet it was done. Maintenance-of-way budgets are about the same today as they were in 1945; nevertheless observations I have made during trips over various roads have convinced me that in most cases the properties are improving rather than otherwise.

Despite this progress I question whether most railroads have approached the "saturation" point with regard to:

(1) Getting more production out of their machinery by improving it and using it in new and better ways, properly programming and scheduling it, and maintaining it in such a manner that the "out-of-service" time is at a minimum; or

(2) Obtaining the best materials available, using them in the proper manner, and conserving them to the greatest extent after they have been put in use; or

(3) With regard to using the money allotted to them to the best advantage of the property; or

(4) With regard to selling their management on the idea that maintenance-of-way work is work which must be done as long as a wheel rolls on the rails; that this work should be done at certain indicated times for the preservation of the property; and that it can only be done economically and properly if money is allotted to the department in such a manner that a competent engineering supervision can work out long-range programs.

In discussing these factors I will necessarily refer to some extent to activities on the Lackawanna. I hope I don't create the impression that these practices are perfect.

(1) *Machinery . . .*

If all concerned are constantly conscious of, and receptive to, the need for improving the machinery used by the M/W forces and the methods of using it, increased savings through its use will result. To cite an example: In 1949 the Lackawanna commenced to use some of its automatic tampers with appurtenant machinery to accomplish a 3-in. raise with tie renewals. At that time the goal was one-half mile of track raised with 500 ties renewed per day. In 1952, with a smaller total daily cost, slightly under one mile of track per day was raised and 800 to 1,000 ties were renewed. This was accomplished by making constant studies of the operation;

" . . . I feel that each maintenance-of-way department employee should be continually analyzing the various operations and materials being used under his supervision, trying to strengthen his position with management to the extent that more freedom of operation will be allowed, and giving consideration to the adequacy and morale of his organization. The intensification of this policy with attendant variations cannot help but keep the maintenance-of-way departments in step with the times . . . "

* At the time Mr. Hiltz prepared these remarks he was engineer maintenance of way of the Delaware, Lackawanna & Western. Effective February 1, he was appointed chief engineer maintenance of way of the New York Central System.

by improving the machinery in use and adding to it as was found necessary; and by constantly experimenting with and changing the manner in which both machinery and labor were being used.

At the rate at which track work is being accomplished today, a division engineer or supervisor or foreman must know, well in advance, the exact date on which he will receive a certain machine or be expected to accomplish a certain operation. With this knowledge, and with a pre-determined force based on the program and schedule, he can accomplish the necessary preparatory work, arrange for the necessary materials to be on hand, and have the desired force available for the final operation. Unless this definite advice is given in an orderly fashion inferior work and/or reduced production will result. I strongly recommend the extension of programming and scheduling to include every type of production operation in maintenance-of-way work—particularly those involving the use of machinery.

Insofar as the maintenance of machinery is concerned, most of us have found ourselves in the position of having a "tiger by the tail." We have acquired unprecedented amounts of expensive machinery without giving sufficient attention, at the same time, to acquiring personnel and facilities to properly maintain it. To accomplish this a well-organized sub-department in the maintenance-of-way department should be established. It should be headed by competent supervision with sufficient authority to accomplish its aims and it should be furnished with the necessary facilities, equipment, and personnel.

(2) *Materials . . .*

I am sure that if maintenance-of-way expenditures are analyzed, it will be found that each year the cost of materials represent a higher percentage of the total. It is evident then, that substantial savings could be realized if we obtained better materials, if we used them more advantageously, and if we practiced conservation while they were in use.

" . . . To realize the importance (of acquiring adequate personnel and facilities to maintain work equipment properly) one need only observe the gang assigned to a tamping machine when that machine breaks down for a short time. The men in this gang, be they 20 or 40 in number depending on the operation, are specialists and they are equipped with tools for a special operation. Their foreman usually doesn't know how long the machine will be down and, as a result, he hesitates to take them away for some other job. Consequently, the entire gang usually does no productive work during the period—which may be a few minutes or as long as an hour—during which the machine is being repaired. These expensive break-downs must be reduced to an absolute minimum through proper maintenance if we are to get full benefit from our machinery . . . "

Rail and ties represent the major expenditures for maintenance-of-way material. The increasing cost of new rail makes it imperative that we confine its use to the most advantageous locations. Every railroad should be divided into new rail territory and relayer rail territory in the proper proportion. It is certainly not consistent to put new rail in territories where speed is slow, due to grades or other restrictions and where a high degree of maintenance is not required. It would be far better to put this new rail in a high-speed location, even though the rail in this track is not worn out, and use the rail removed in the lower-speed territories.

There are an increasing number of conservation measures available for lengthening the effective life of rail and, if these are properly employed, rail can be allowed to remain in track much longer than in the past. First and foremost among these measures is the proper maintenance of surface, line and gage. Too often rail is ruined by surface and line bends or bolt-hole breaks which develop through poor maintenance. End hardening will retard batter of rail ends; welding will eliminate this batter when it does develop. These two operations will greatly extend the life of rail provided good splices of proper dimensions, camber and straightness are used in conjunction with them. The elimination of the joint entirely by continuous welding has apparently proved practical and economical in some locations and this method should receive continued careful consideration.

The so-called "frozen-joint" construction is now being developed and it is claimed that this gives the benefits of continuous welded rail without some of the disadvantages and at less cost. The elimination of engine driver burns by welding in the proper manner has been proved safe, practical, and economical. Surface grinding of rail has received less attention than any of the measures mentioned, although in my opinion it offers great possibilities for increasing the effective life of rail if properly used.

Although there are many aspects concerning the use of ties which could be discussed, I will confine my remarks to only one which I regard as highly important. When economy is the watchword, the renewal of ties receives the greatest attention. Under these conditions, if a tie has "good neighbors" we are inclined to leave it in track. If we do, how long will these "neighbors" continue to be good? Each tie in track should be capable of taking its share of the load. If it cannot do this, its "neighbors" must take over, with the result that the over-load will shorten their lives.

Railroads that have been fortunate enough to arrive at and maintain an over-all good tie condition will have, over long periods, a lower average renewal per mile than those who practice economy for long periods and then, of necessity, have to "catch up." Good ties are the foundation of good maintenance; too much economy in tie renewals will inevitably result in lower average tie life, higher surfacing costs, and shorter rail life. During the progress of a tie-

" . . . It is certainly not consistent, economical, or contributory to good morale for a track supervisor to have 20 extra gangs in June, one in July, and 20 again in August. Yet this condition, with all its evils, can and does exist under the monthly appropriation system. I don't believe there is a maintenance man who wouldn't rather accept a reduced budget provided he knew that he could depend on it and spend it as good maintenance practices indicate . . . "

" . . . The selection of materials for maintenance of way should be the responsibility of competent maintenance-of-way supervision who should, of course, take advantage of the experience of other railroads and the facilities of the various available test departments. Unless other things are equal, price, reciprocity and tradition should not be considered as governing factors in the selection of materials to be purchased. Maintenance-of-way supervision must realize, however, that in most cases they will have to "live" with the materials which they have selected for half a lifetime and they should not let prejudice, personal opinion, or other such factors, govern their selection . . . "

" . . . After consideration of all of the factors involved, including the present day cost of ties, which is increasing rapidly, I believe American railroads should unite in insisting:

(1) That ties of the proper type be furnished them—even though at a further increased cost.

(2) That immediate measures be taken to insure an adequate supply of the proper grades of ties in the future.

(3) That extensive research be conducted to improve the methods of curing and treating ties . . . "

renewal raise on the Lackawanna any tie is renewed which is felt will not properly support the track for seven years. As no new ties are used in yards and sidings, the so-called "secondhand" ties removed are used for this purpose. This practice has been severely criticized. However, this road has an over-all excellent tie condition: yet the average renewal rate per mile over the last 20 years will stand comparison with any railroad in the United States.

The real field for exploration in tie conservation is in the selection of the tie, the curing of the wood, and the preservation process used. Many of us are accepting ties of inferior grade because of availability, reciprocity, price or other factors which seem important at the time. It is likely that this practice will increase in the future as the proper grades of ties become less available. Essentially we are curing and treating ties in the same manner that we did 40 years ago. There seem to be too many variables in this curing and treating process as evidenced by the fact that some ties fail after 6 or 8 years in track while others of the same grade last 40 years.

(3) *Money . . .*

The natural reaction to the premise of using the money allotted to the best advantage of the property is: "Just what do you think we are doing now?" However, I would like maintenance men to think back to the times in the past when, for reasons which were regarded as important at the time,

(a) We raised track without having sufficient ballast allotted to fill in behind and hold the raise; or

(b) We laid rail without having sufficient men allotted or available to take care of it after it was laid; or

(c) We installed new bridge ties on badly wasted stringers which should have been renewed previously but for which no appropriation had been made.

Labor must have material with which to work, and material involves labor for its application and maintenance. The proper balance between them will result eventually in the lowest over-all maintenance cost. Competent maintenance-of-way supervision must have as free a hand as possible in achieving this balance.

The programming of jobs so that they follow in natural sequence is equally important. To clean ballast after track is raised, to renew ties after track is surfaced, or to renew steel after a bridge has been painted sounds ridiculous. Yet all of these have been done and they will be done in the future unless proper programming is done and control exerted. A considerable amount of wasted effort can be eliminated by doing the right job at the right time.

(4) *Management . . .*

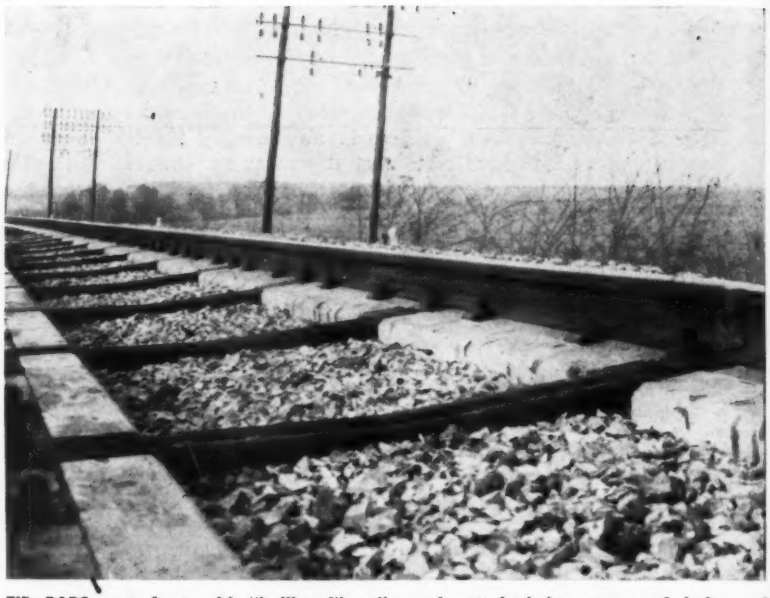
Too often top management regards the maintenance-of-way budget as a well from which dippers full of funds can be drawn to meet other apparently more necessary expenditures. It is up to the maintenance men to convince them that it is far easier and cheaper to renew that one bad tie this year than have to renew it next year along with its neighbors which failed because it was not carrying its load. Maintenance-of-way work must be done at the proper time if it is to be done at the lowest cost.

In order to use money to the best advantage of the property, to balance labor and material; to set up a job sequence; to program and schedule operations; maintain machinery; or to establish a cycle of maintenance consistent with management's requirements, maintenance-of-way supervision must set up long-range programs. By "long range" I mean for periods not less than one year but preferably much longer. Long-range programs cannot be established without long-range appropriations.

It is up to maintenance men to convince their managements that budgets must be allotted at the least on a yearly basis; that once these budgets are allotted they must be allowed to stand unless major emergencies indicate otherwise; and that, within reason, they as maintenance men must be allowed to use these budgets to achieve a proper balance between labor, material, and services as the condition of the property indicates and as good maintenance dictates.

Competent supervision is the backbone of a maintenance-of-way department and will be more so in the future. It is a general practice, when times become "tight", to look over the roster of supervision and cut wherever possible. Nothing could be more questionable, in my opinion. Maintenance-of-way supervision represents from 4 per cent to 7 per cent of maintenance-of-way expenditures. If that supervision is competent, it is certainly worth that and perhaps more. With our present-day tendency toward specialization, large gang work, and mechanized operations, it is impossible to get maximum production unless competent supervision is directly in touch with the job. Every competent supervisor earns for his company many times his wages by coordinating work and obtaining more production. I wonder whether we have given sufficient attention to the wages, working conditions, and prestige of our supervision so as to make the work sufficiently attractive to encourage additional competent men to join us.

After a lapse of more than a century, masonry blocks are again being used to support the rails of a railroad, though today they are not of stone but of reinforced concrete and in a longitudinal form. Advantages of this system are said to make it particularly suitable for use with continuous welded rail.



TIE BARS, cut from old "bullhead" rails and attached by means of bolts and square clips, serve to maintain the correct gage and the 1-in-20 cant of the rails.

French Railways Try Out

Concrete Sleepers Under Welded Rail

A TEST section of Laval track is shown here. The structure, which is extremely rigid, derives flexibility through the use of clip fastenings and rubber pads.

• A new type of track structure, invented by M. Laval, a district engineer on the French National Railways, has recently undergone a series of tests and is reported to be giving satisfactory service under conditions of both light and heavy traffic and at speeds as high as 70 m.p.h. The arrangement, as described in the Railway Gazette, London, England, consists essentially of two longitudinal rows of reinforced concrete blocks, or sleepers, one under each continuous welded rail.

Tie Bars Maintain Gage

The blocks, which measure 4 ft. 3 in. in length, are 2 ft. 3½ in. wide, 6¼ in. deep, and weigh approximately 750 lb. each. Between successive blocks a space of about 8 in. is allowed for the placement of steel tie bars. These bars, which serve to maintain both the correct gage and the 1-in-20 cant of each rail, may be made from any rolled steel section. In this instance they were cut from old "bullhead" rails. The tie bars are fastened to the underside of the rail base by square clips and bolts similar to those used with the road's standard transverse

metal ties. The steel tie bars have a 1-in-10 bend at their centers to maintain the cant of the rail. In addition, the concrete blocks are given a 1-in-20 cant at the time they are set in the ballast.

Clips, Rubber Pads Used

Each running rail is secured to each sleeper block by four spring clips, two on each side of the rail, placed approximately 12 in. from the transverse center line of the block. These clips are secured in place by hold-down bolts embedded in the block. Bolt holes in the blocks are lined with metal sleeves, threaded to engage the bolts. The rails are seated on corrugated rubber pads, $\frac{3}{16}$-in. thick which are of the same width as the base of the rail. It is pointed out that the spring clip-rubber pad combination provides double vertical flexibility in the track structure which otherwise is extremely rigid. This feature, plus the fact that the Laval track has a greater bearing surface on the ballast than conventional track, is said to provide an installation ideally suited for use with track construction employing long welded rails.

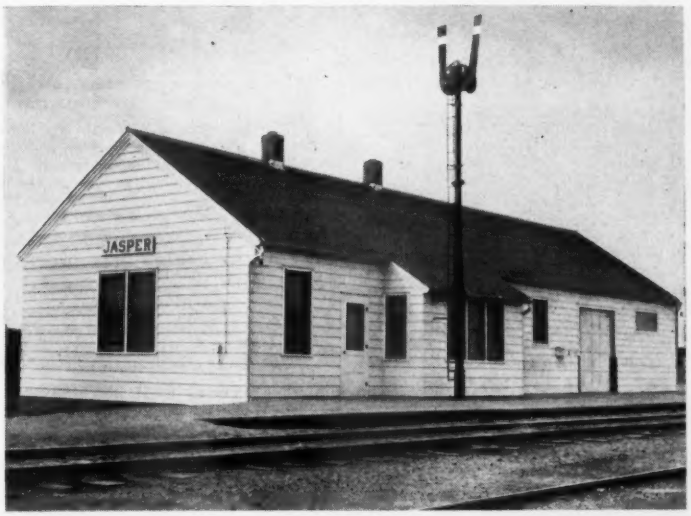
The Laval track, invented in 1945, was first installed in 1946 in Batignolles yard, Paris. This installation is composed of approximately 197 ft. of track subjected to heavy traffic, but at low speeds. In 1948 a more extensive test section was installed at Poissy-Ceinture, west of Paris, where the traffic is quite heavy and speeds range up to about 50 m.p.h. In this instance, some 1,440 ft. of rail were laid on 1,311 ft. of Laval blocks. A third test section of Laval track was laid in 1951 on the Paris-Granville line near Houdan. Speeds of up to 70 m.p.h. are attained on this ½-mile section where traffic is moderately heavy.

These tests proved so satisfactory that the railroad, during this past summer, made two more installations—one approximately 3 miles in length near Houdan, and another between Ormoy and Soissons, 2 miles in length. Thus, to date, a total of approximately 6 miles of Laval track have been placed in service.

Scarved Joints Used

The continuous welded rails used in the later installations are approximately 2,625-ft. (800-meters) long and have a weight of 92 lb. per yd. Special scarved joints, designed to absorb changes in rail length due to thermal expansion and contraction, were installed at three points in each ½-mile section of track. These special joints are supported on regular wood crossties for a distance of approximately 60 ft. on either side of the joint to secure addition horizontal flexibility of the track structure in the joint region.

BEFORE remodeling, Great Northern Station at Jasper, Minn., looked like this.



AFTER the work had been completed, the revamped building, now a single-story structure, presented an attractive appearance.

GN Modernizes Another Station

• Continuing its program of remodeling and modernizing smaller freight and passenger stations, the Great Northern recently revamped its depot at Jasper, Minn., about 219 miles southwest of St. Paul.

Because the old structure was still sound, it was considered practical to utilize part of the original frame in the modernized building. The two-story portion of the old depot was severed from the remainder of the structure and served as the agent's office and passenger waiting room during the remodeling period. The balance of the building was lowered approximately 14 in. by cutting off the bottom of the studding.

The exterior was re-sided with 10-in. wide cedar siding and the roof reshingled. New doors and windows were installed. The interior was finished with acoustic tile on the ceilings and Nu-wood random-width planking on the walls above plywood wainscoting. New chimneys were erected and oil heat furnished to the waiting room, office and warm room. Floors were covered with inlaid linoleum. Modern rest room facilities are provided.

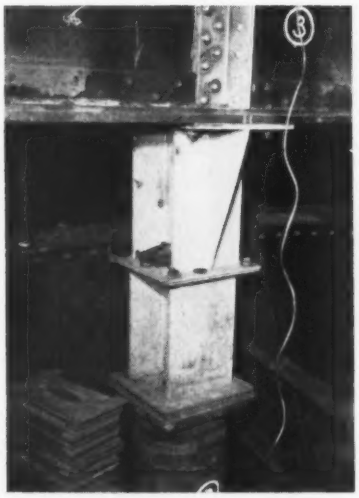
The freighthouse was equipped with two overhead doors, one on the east end, adjacent to a highway, and the other on the track side. The outside of the building was painted white with green trim. Replacement of the old timber platform completed the project.

BEFORE the raising operation was begun, the South Shore bridge over the Calumet river in Chicago looked like this. Line car at far right is removing overhead power line breakers from the catenary portals at the west end of the span.

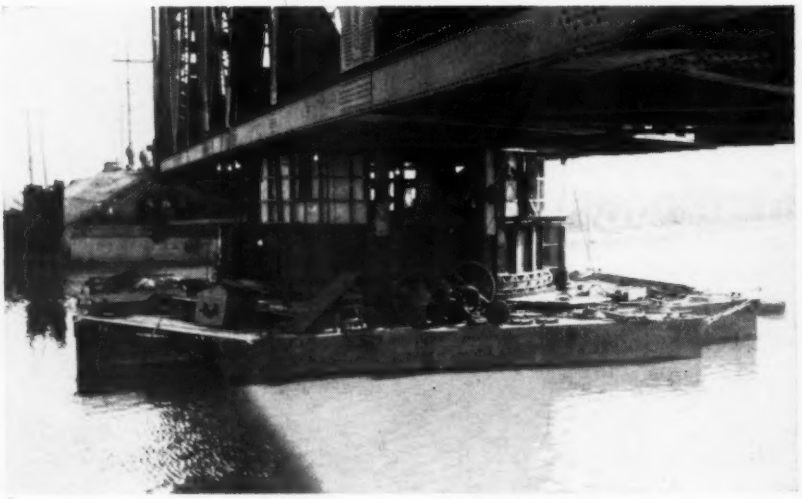
1 After the first 2-ft. raise was completed, structural steel blocking was bolted in place between the drum girder and the loading girders at the center pier.

Act of Congress Raise South

Existing legislation had to be revised before the Chicago, South Shore & South Bend could start work on converting a swing span over the Calumet river to a fixed structure. To complicate matters still further, river traffic forced postponement of the project until December. The weather, however, was favorable and the job was completed in short order.



2 Prior to final raise, additional 2-ft. blocks were secured to jacks.



3 View of center pier shows three layers of blocking placed during raising. Only those pieces of span-turning mechanism which interfered with raising were removed.

AFTER the raising operation had been completed, the structure presented this appearance. A total raise of 6 ft. was accomplished using four 500-ton jacks at the center pier of the span. Raise was in three 2-ft. stages—took 7 hr.

Needed to . . . Shore Bridge 6 Ft.

• Just 30 hr. after it was closed to railway traffic on December 5, a 228-ft. double-track, through-truss, center-bearing swing span of the Chicago, South Shore & South Bend was reopened to traffic—at an elevation of 6 ft. higher. In the process the structure had been converted to a stationary bridge; hence the road will no longer be subject to the expense and inconvenience of operating it as a movable structure.

To understand the problems encountered by the road in raising and converting this bridge it is necessary to go back to February 7, 1905, when President Theodore Roosevelt signed an Act of Congress authorizing the construction, by the Kensington & Eastern Railroad, of a double-track swing span over the Calumet river just south of 130th street, Chicago. Two years later the bridge was completed—a 228-ft. structure spanning a 90-ft. channel on either side of its center pier.

Years passed. The K&E, now owned wholly by the Illinois Central, was leased in perpetuity to the Chicago, Lake Shore & South Bend and is today operated as an electric line by the latter company's successor, the Chicago, South Shore & South Bend.

In 1951 the South Shore, wishing to reduce operating expenses incurred through the operation and maintenance of the swing span, to say nothing of the approximately 5,000 annual movements of the bridge and the associated traffic delays to the 84 trains which operate over the bridge daily, submitted to the district engineer of the U. S. Corps of Engineers a plan for converting the structure to a fixed

4 Pile driving began as soon as bridge was raised. Pile driver is shown here driving piles for approach trestle at west end of span.

5 American Bridge Company men are shown here lowering lateral girder to be placed between end bearing posts.

6 Frame bents were constructed at the ends of the approach trestles adjoining the bridge. Cables shown were used to secure span during the raising operations.

7 On Saturday afternoon, December 6, stringers were laid for the westbound approach trestle at the east end of the span on bents constructed the night before.

span. This action was necessary since the bridge spans navigable waters covered by government regulations. On October 30, 1951, the proposal was returned to the South Shore advising that the Corps of Engineers could not issue a permit authorizing such a conversion, since the original act provided for a swing span only. In due time a proposed amendment to the act was introduced in Congress. The bill was finally passed and signed, by President Truman on July 16, 1952. The amendment, as passed, provided for the construction of either a swing or a fixed span—said construction to be with the approval of the Chief of the U. S. Corps of Engineers.

Plans Are Approved

The South Shore then resubmitted the original plans to the Corps of Engineers. After considerable discussion between the three parties concerned (in addition to the Corps of Engineers and the South Shore, the plans had to be approved by the Illinois Central as the owning company), it was decided that the conversion from swing to fixed span was permissible only if the span, in its fixed position, were no lower than the west existing fixed span across e river. To meet this stipulation, raise of 6 ft. was found to be necessary.

All three of the parties involved agreed and a permit authorizing the work and the necessary closing of the river to traffic for a period of one week was issued by the Corps of Engineers on August 22,

8 As trestle work continued on the westbound approach, rail was laid on the previously constructed eastbound approach trestle.

9 Meanwhile, track gangs were raising the westbound approach track to connect with the yet unfinished trestle.

1952. The job was scheduled for mid-October. The South Shore immediately began the placement of some 20,000 cu. yd. of sand for widening the approaches to the bridge in preparation for raising them. The sand was hauled to the site in 25 air-dump cars. A Jordan spreader and Caterpillar D-4 bulldozers worked around the clock spreading and distributing the material.

It developed, however, that because of river traffic the bridge could not be raised until after December 1. Consequently the officers of the road had two possible courses of action open to them. They could postpone the project until spring, or they could do the work during the first week in December hoping that the weather would not be too severe. The decision was made in favor of the latter alternative—and as it happened the weather remained relatively mild.

On November 17, the eastbound track was taken out of service and all traffic over the bridge was routed over what was normally the westbound track. Two approach trestles were constructed, one at either end of the bridge, on the eastbound track by Illinois Central forces. These trestles, which were comprised of one frame bent immediately adjacent to the bridge, and three six-pile bents spaced 14 ft. apart, were placed to bring the approach grades up to the proposed new elevation of the bridge. A total of 10,000 cu. yd. of stone ballast was brought to the site in bottom-dump cars. Employing Nordberg power jacks, the eastbound track approaches were raised to meet the trestles. A grade of approximately 1 per cent was established on both approaches, the length of this grade being 1,200 ft. on the east side of the span, and 1,400 ft. on the west.

On November 30, at 6:30 p.m., river traffic under the bridge was halted. At 8:30 p.m., Friday, December 5, the bridge was officially closed and all South Shore traffic was routed around the structure by a fleet of leased buses. Line, signal and communications crews swarmed onto the bridge and began removing cables and power lines. Temporary lines were strung in positions where they would not interfere with the raising work. At exactly 8:45 p.m. the raising operation began.

Four Jacks Used

Four 500-ton hydraulic jacks had previously been placed in position on the center pier of the span. These jacks, which provided all of the lifting power required for raising the 660-ton span, were seated directly on the concrete surface of the pier and were positioned so as to bear against the center loading beams of the structure. The jacks were powered, through pumps, by a single compressor which was located on the bank of the river. During the actual raising operation, two men were assigned to each jack, one at the jack itself and one on the deck of the bridge where the pumps were located. The structure was lashed by wire rope to the catenary portals at either end of the bridge to prevent any lateral movement of the span during the bridge raising operation.

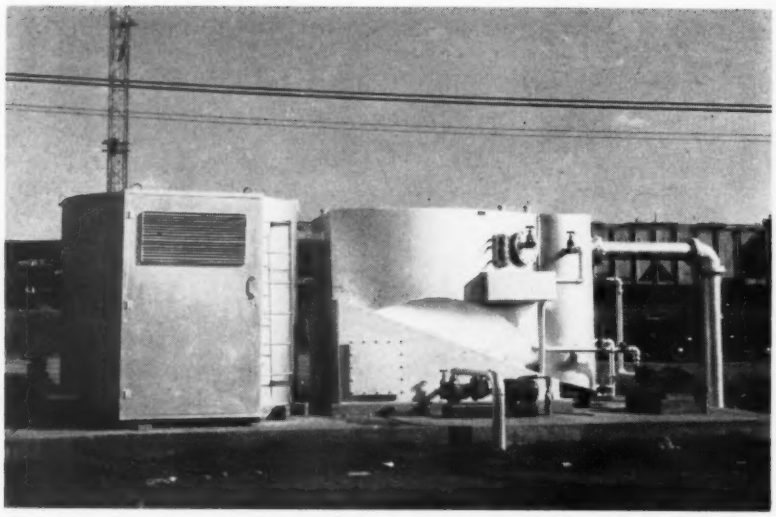
The bridge was raised in three 2-ft. stages. When it had been raised a total of 25 in. (the capacity of the jacks), prefabricated structural steel blocking was bolted in position between the drum girder and the loading girders at the center of the span. Pressure was then released on the jacks, completing the first stage of the project. The jacks were then lowered and 2-ft. blocks bolted to their tops. The operation then continued through the second stage wherein another 2-ft. raise was accomplished and a second layer of blocking placed between the girders. A second set of blocks was bolted atop the jacks and the third stage began. At 3:45 a.m., December 6, the raising operation was completed. At 8:00 a.m., the same day, river traffic was permitted to pass beneath the span.

As American Bridge Company forces began the work of reinforcing the center and end bearings, the pile driver was moved into position and work started on the construction of a trestle approach for the westbound track at the east end of the bridge. Crews of the Bridge Company then placed pin-connected bearing posts resting on the concrete abutments, at the ends of the span, which were later connected by lateral girders. Simultaneously, rail was laid on the eastbound trestles connecting with the bridge. Line crews went to work re-stringing power lines, and ballast cars were brought in to begin raising the westbound track east of the bridge to the level of the non-yet-completed approach trestle.

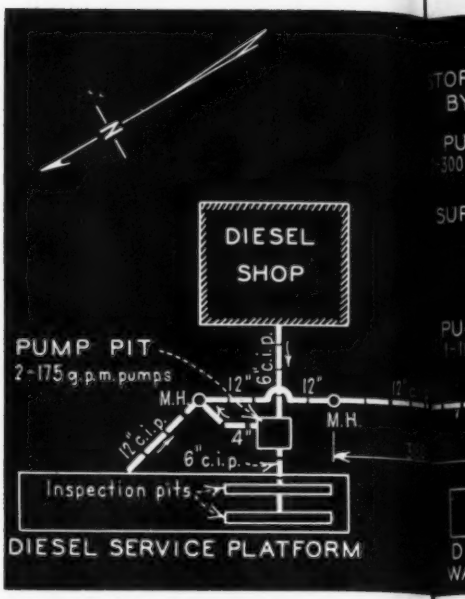
At 2:30 a.m. December 7, the eastbound track across the bridge was ready for operation. Meanwhile, the pile driver, which had previously been routed over foreign lines to the west end of the span, was working on the last approach trestle. On Thursday, December 11, at 11:01 p.m., just 6 days, 2 hrs., and 31 min. after the bridge had been first closed to railroad traffic, the raising and trestle work on the westbound track had been completed and double-track operation was restored across the span.

The project cost the South Shore an estimated $100,000. Track, power line, communications and signal work was done by South Shore forces totalling approximately 50 men. Pile driving and trestle work was done by Illinois Central forces. Not a single injury occurred.

10 **The eastbound track, shown here, was opened to traffic on Sunday morning, December 7. Double-track operation was resumed just five days later on Dec. 11.**



SURGE TANK (left) and oil separator at Birmingham. Oil skimmed from separator is drawn off, flows into small box, and passes into storage tank below separator.



FLOW DIAGRAM shows path of waste water from the three contributing sources

Advantages Claimed for
Oil Separator Installed Above

Fully complying with federal and state requirements for preventing stream pollution, the oil-separating facility installed on a concrete mat by the Southern at its Ernest Norris yard in Birmingham, Ala., has some distinct operating advantages over the usual buried-type installations.

By A. B. Pierce

Engineer of Water Supply (Retired)
Southern Railway System

• Among the noteworthy facilities installed by the Southern in its new Ernest Norris yard at Birmingham, Ala., is a Gale oil separator that differs from the usual type of installation in that the entire facility is built above ground on a concrete mat. This installation was designed to prevent oil waste originating at the diesel shop, and the diesel service and wash platforms, from entering a nearby stream which flows through a residential section of Birmingham. It conforms to state and federal requirements for preventing stream pollution.

The outstanding advantage of this system is that all major components are readily accessible, the only exception being the sump which collects all of the oil effluent flowing to the separator. With this type system, the operator has easy access to the surge tank, electrical equipment, pumps, oil gauge glasses, and other items that go to make up the separator, so that its operation and maintenance are made easier. Also, separators that are installed below ground in concrete pits require a sump pump, drainage, vents, a roof or top, and generally do not prove as satisfactory from an operating standpoint as the above-ground installations.

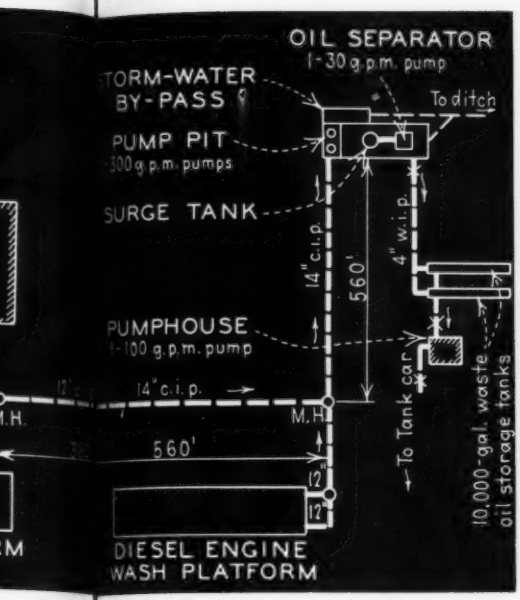
System Provides for Future

The new system includes drain lines, pump pits, pumps, a storm-water by-pass, a surge tank, an oil separator, oil-storage tanks, motors and motor controls. The site selected for the oil separator is one where all waste water that is likely to contain oil will pass through it. The oil separator has a capacity of 500 g.p.m., i.e., it is capable of removing the oil content from water passing through it at the rate of 500 g.p.m. Although normal flow from the present facilities is only 300 g.p.m., the larger capacity separator was installed to provide for future expansion.

The surface drainage from the diesel washing platform and from the diesel service platform (see diagram) flows by gravity through 12-in. and 14-in. pipe lines to the oil separator. However, due to grade conditions, it is necessary to pump the effluents from the diesel shop and from the inspection pits of the diesel service platform, so a sump well was constructed to collect the oily effluents from these facilities. This sump was equipped with two submerged 175-g.p.m. bladeless impeller non-clog trash pumps powered by 2-hp. motors installed at ground level.

Pumps Are Automatic

The pumps at this point are automatically operated by float control with alternator for automatically alternating the pumps for even wear and for bringing the second pump into operation when the flow into the sump exceeds 175 g.p.m. The pumps discharge through a 4-in. pipe into a near-by manhole located in the previously mentioned gravity drain line. The gravity drain line, in turn, discharges into a sump,



to the separator. Waste oil then flows to storage tanks, thence to tank cars.

AERIAL VIEW of the Southern's Ernest Norris yard at Birmingham, Ala. Arrow shows location of the above-ground oil separator in relation to other facilities.

Ground

or pump pit, which forms an integral part of the oil-separator system.

This pump pit is equipped with two 300-g.p.m. pumps powered by two 3-hp. motors. One pump is operated at a time, the second pump and motor being for stand-by service in the event one pump breaks down. The pumps are automatically operated by float control. These pumps force the oily water from the pit into the surge tank, which is about 8 ft. in diameter and 7 ft. high. This tank serves to calm the flow of water before it enters the oil separator.

From the surge tank the oily water passes through the oil separator, which is designed as to size, and with proper plates and baffles, to accelerate the rising of the oil globules to the surface. The outlet of the separator is located at such a distance below the top liquid level as to permit oil to accumulate on the surface.

Has Adjustable Skimmer

The separator is equipped with a sight glass and trial cocks to aid in determining the level of the oil in it. I tis also equipped with an adjustable draw-off or skimmer which is located approximately two feet from the top of the separator and which can be set to assure that only oil will be drawn off when the draw-off valve is opened.

The oil that is drawn from the separator flows by gravity into an oil box placed immediately under the draw-off valve, and thence through a small diameter pipe into a 700-gal. oil storage tank located below the sloping bottom of the oil separator. This storage tank is equipped with a petrometer which indicates at a glance the amount of oil in the tank.

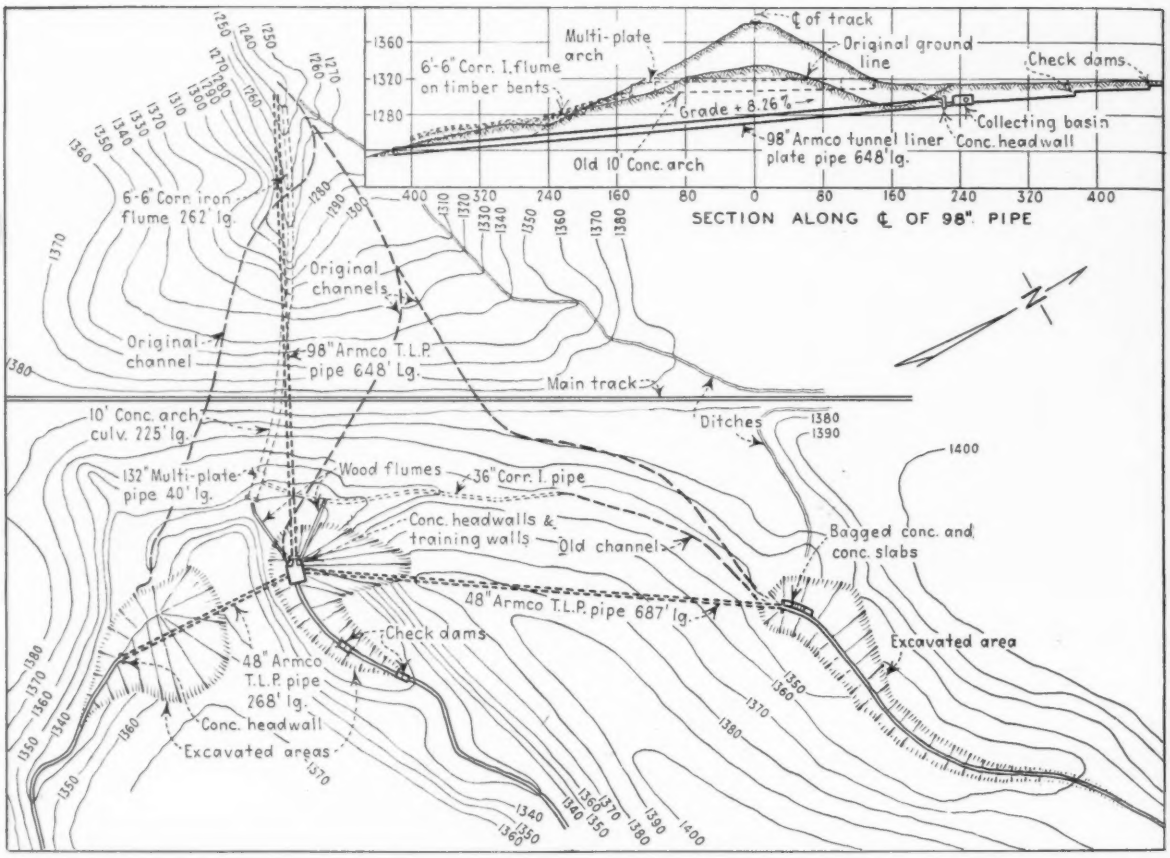
Provision for Cleaning

The bottom of the oil separator is fitted with spray pipes which are used for the periodic cleaning of the separator. A slusher pump is operated to pass water at high pressure through the spray pipes, thus causing sufficient turbulence at the bottom of the separator to dislodge all sediment and silt. This residue is discharged into the pump pit. The pump pit is cleaned at scheduled intervals with a gasoline-powered Mud Hog pump.

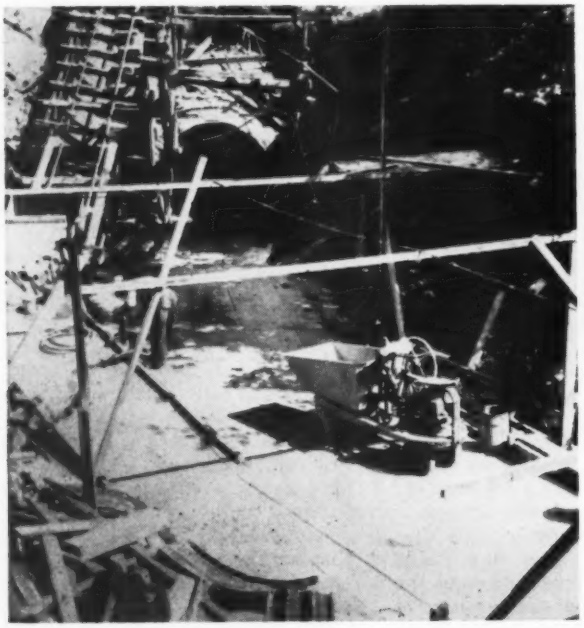
Oil is pumped from the collecting tank by a 30-g.p.m. rotary-type pump into two 10,000-gal. storage tanks. It is drawn from these tanks by a 100-gal. rotary-type pump into a tank car in which it is transported for final disposition.

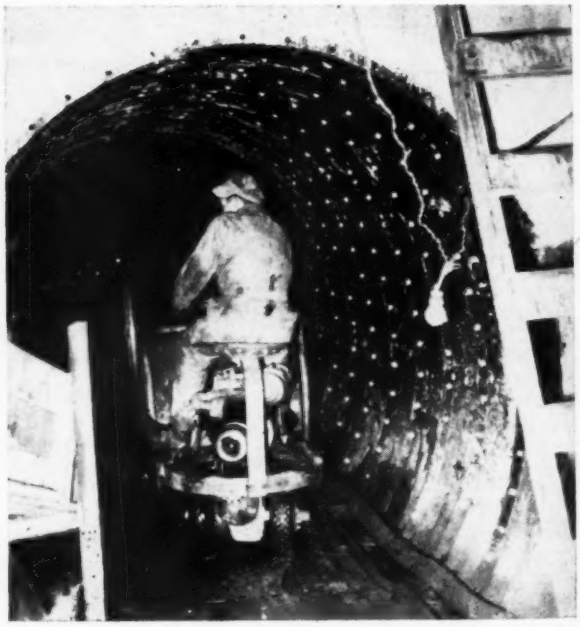
By-Pass Constructed

This system will handle the normal waste-water flow from the contributing areas of the yard. But it is estimated that during periods of heavy rainfall the flow will greatly exceed this rate. To provide for this abnormal flow, a storm-water by-pass was constructed. This by-pass utilizes a baffle wall and an adjustable weir to permit water to pass through it only when the flow exceeds 300-g.p.m. It is so designed that only water from the bottom of the pit, with very little, if any, oil content, will by-pass the separator. The by-passed water merges with water that has passed through the separator; thus the oil content is diluted before the total effluent reaches the stream.



TOPOGRAPHICAL PLAN and section shows drainage conditions existing at the "Three-Fingered Mike" fill on the Erie near Fillmore, N. Y. Old concrete arch culvert could not remove water that seeped below it into the embankment. With new pipe installations (heavy dashed lines), all drainage is collected at a lower level before passing under the embankment.





LEFT—During construction, the outlet end of the 98-in. pipe tunnel was extended with timber and planking thus providing a roadway for the use of the mechanized equipment which was used to haul out the excavated material. The corrugated-iron, half-round gutter, shown at left supported by timber bents, is the old flume leading from the outlet end of the original concrete arch that has been installed at the higher level. RIGHT—Motor carts, such as the one shown here, provided one of the quickest means for removing the excavated material while tunneling the 648-ft. distance through the embankment.

JUNCTION of drainage from the three channels was made at a concrete collecting basin, the floor of which was at the same level as the paved invert of the 98-in. pipe (foreground).

TEMPORARY PLATFORM along bottom of 98-in. pipe was removed later and replaced with a pavement along the invert. Electric lights were strung along the side during construction.

On The Erie . . .
Extensive Tunnels Stabilize Wet Fill

Track settlement and embankment slippage are stopped when old concrete-arch culvert under 90-ft. fill is replaced by a 98-in. Liner-Plate pipe, tunneled in place at an elevation 20 ft. lower. Installation also includes collecting chamber and two 48-in. branch tunnels.

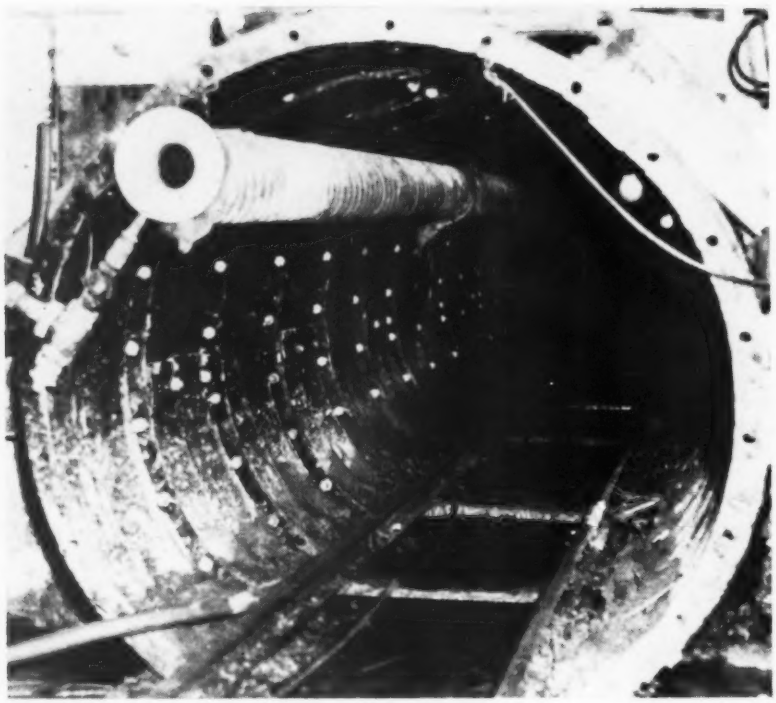
• The conversion of an exceedingly troublesome spot that formerly required constant maintenance into just another stretch of good railroad has been accomplished on the Erie by what might be termed "drastic" drainage measures.

The spot is the so-called "Three-Fingered Mike" fill on the River Line of the Erie near Fillmore in western New York. This fill is typical of many on this picturesque though rugged section of the railroad—a low grade, single-track freight line 32 miles long with centralized traffic control—which carries through freight trains both east and west between New York and Chicago. The fill is 90 ft. high and parallels the Genessee river. It was constructed in 1906 and was built directly over a stream formed by three smaller ones which converge just north of and downstream from the present track. This junction of the three streams is under the toe of the north slope. The main stream flows north under the railroad fill. The fill was constructed of local material, mostly clay, silt and sand.

The original culvert that carried the stream was a 10-ft. concrete arch built on a flat grade. The inlet of the arch was approximately 20 ft. above the original streambed, and the several streambeds were filled up to the flow-line level of the culvert. In 1936, this original arch was extended at both ends with an Armco Multi-Plate arch, and a flume was constructed from the outlet end to carry the water down the slope.

For many years the fill held considerable water, which was naturally a major cause of trouble and concern. This water caused constant track settlement, spasmodic fill slippage, bulging, and movement of the slopes. It was believed that the small feeder streams on the north side, together with water seeping through the original streambed, kept the fill material wet.

Another unstable fill, known as



HEL-COR VENTILATING PIPE was used to give proper ventilation when installing the 48-in. pipe tunnels. Track was laid to expedite movement of dirt buggies.

Station 148 and located several miles east of the "Three-Fingered-Mike" fill, had also given maintenance trouble but had been successfully corrected in 1946. When this fill was constructed in 1906, the old streambed was raised with material excavated from adjacent cuts and a culvert was installed at the higher elevation. This probably was done for convenience and economy, but it only aggravated the situation. Through the years, the stream undoubtedly found its way down to its original bed. This, together with springs seeping into the fill on the upstream side, kept the fill unstable.

The corrective steps taken for stabilizing this fill consisted in part of digging deep intercepting longitudinal ditches on the upstream side of the fill. These collected water from springs and ran it to a new 52-in. Armco Tunnel Liner-Plate culvert which was installed about 40 ft. lower than the former culvert and at about the level of the original streambed. The highly successful results obtained as a result of these corrective measures at Station 148 indicated a somewhat similar treatment for the "Three-Fingered Mike" fill.

At the latter location, utilizing both earth auger drillings and test bits, an extensive field investigation was conducted before a pipe layout was made. This investigation was carried out to determine the elevation of the old streambed and showed that it was about 20 ft. below the flow line of the existing culvert. A tentative plan was drawn up calling for a main culvert of 98-in. Tunnel Liner-Plate pipe, 648 ft. long, starting at the toe of the south slope and running under the fill to a collecting basin at the toe of the north slope. From this collecting basin, two branch tunnels of 48-in. Tunnel Liner-Plate pipe, one 650 ft. in length and the other 200 ft. in length were to extend laterally to pick up the feeder streams at points located beyond the toe of the slope.

A contract was placed with the Construction Section of Armco Drainage & Metal Products, Inc., in the spring of 1950. Construction work began in May of that year. Pipes were installed according to the plan and so that the inlet ends would be at the elevation of the old streambeds as determined by the test pits and borings. Lengths of the 48-in. lines were changed slightly during construction, but essentially the original layout was followed. Stream channels were excavated down to their original beds where they extended beyond the 48-in. pipes.

The first part of the work was the installation of the 98-in. main tunnel, the plate for which was shop fabricated about 5 per cent elliptical. Excavation from this tunnel was mostly disposed of in a ravine downstream from the outlet, but some of it was carried up the slope for filling under and around the flume leading down from the old arch.

Water Pockets Encountered

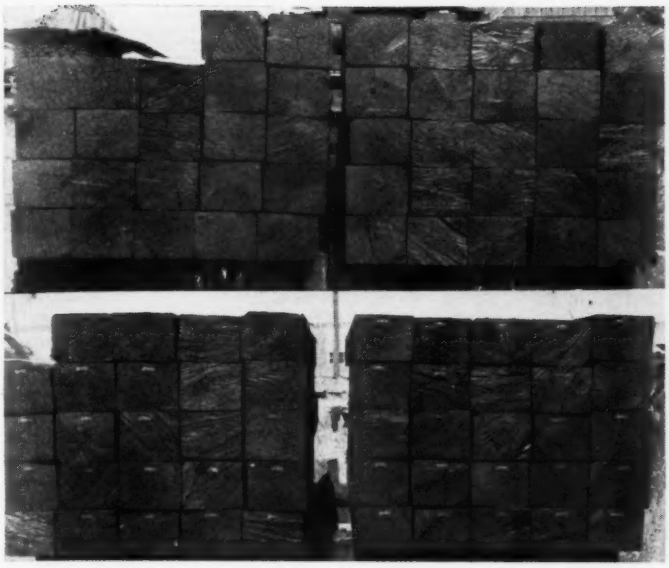
Progress on the main tunnel was satisfactory for about 450 ft., beyond which point, however, silt and trapped water pockets were frequently encountered. This condition made the tunneling work slow and hazardous. It was not only difficult to maintain the face of this material, but just as difficult to maintain a suitable grade in the tunnel. The head end, with weak bearing under the bottom plates, tended to settle.

When the main tunnel had progressed to a previously dug shaft at the upper end above the old stream junction, the two 48-in. lines were installed perpendicular to the main tunnel by tunneling. These 48-in. lines were extended to intercept the two main feeder streams at points well beyond the toe of the slope. The excavation from the feeder lines was used to backfill the old arch culvert.

Tunnels Coated and Paved

For utmost durability, all tunnel-liner plates were galvanized and asphalt coated. In addition, the inverts of all three lines were 25-per cent paved. The collection chamber that was built at the site of the junction of the main tunnel, the two 48-in. tunnels and the third feeder stream, was constructed of reinforced concrete.

The investigation, design and construction work involved in this project were under the direction of B. Blowers, chief engineer maintenance of way of the Erie, assisted by H. J. Weccheider, engineer maintenance of way of the Western district, and the field work was carried out under the direct supervision of L. Rossman, division engineer, with the assistance of S. G. Durston, master carpenter. C. G. Bucher, assistant master carpenter, was assigned full time to the job. Armco Drainage & Metal Products, Inc., was represented on the job by J. A. Bader, general superintendent, Joe Cotterino, job superintendent, and D. D. Baker.



THESE CROSSTIES, photographed after they had been treated, were cut from green boxed-heart Douglas fir timbers and processed by Vapor Drying. They show relatively little checking and splitting. These same ties have been installed on a section of test track on the Union Pacific.

TEN GREEN boxed-heart Douglas fir timbers, 7 in. by 9 in. by 18 ft. long, were cut to form two mated groups of crossties. Both groups are shown in this view taken three days after air-seasoned ties had been treated. Ties at right were air seasoned nine months before treatment—ties at left were treated by the vapor seasoning and treating process. Both groups were exposed to the same weather conditions.

Seek Ways to Make

Boxed-Heart Douglas Fir Ties Last Longer

Test ties are installed on two railroads for comparing the performance of boxed-heart Douglas fir crossties treated by the vapor seasoning and treating process with similar ties that were air seasoned before treatment.

PROCESSING SCHEDULE AND TREATMENT RESULTS FOR BOXED-HEART DOUGLAS FIR TIES DRIED BY AIR SEASONING AND MATED TIES PROCESSED BY VAPOR DRYING

Seasoning:	Air-Seasoned	Vapor-Dried
	9 mo. at Eugene, Ore.	5½ hr. at 270 deg.
	Boultonized 5 hr. 190 deg. F. at 25 in. vacuum	....
Impregnation with Creosote-Petroleum Solution:		
Initial air	25 p.s.i.	10 p.s.i.
Preservative pressure	150 p.s.i.	120 p.s.i.
Preservative pressure duration	2 hr. 35 min.	3 hr. 30 min.
Preservative temperature	190 deg. F.	185 deg. F.
Final vacuum	2 hr. at 23 in.	1 hr. at 25 in.
Total cylinder time	11.5 hr.	11.4 hr.
Retention of preservative	7 lb./cu. ft.	9-10 lb./cu. ft.
Penetration of preservative (inches):		
Solid black penetration	0.4	0.9
Solid black plus skip penetration	1.0	1.1
Moisture content before seasoning	37%	37%
Moisture content at time of treatment	15%	18%

• Under a cooperative research program arranged between the Taylor-Cloquitt Company and the Oregon Forest Products Laboratory, work was begun in 1950 to determine the applicability of the Vapor-Drying process to the boxed-heart Douglas fir ties of the West Coast species. Boxed-heart ties were selected for the test because it is known that a large proportion (estimated at approximately 40 per cent) of Douglas fir ties are of this type. Such ties, having the pith situated entirely within the four side faces, are notorious for their tendency to check and split. Furthermore, since the railroads are having to accept more and more boxed-heart ties as the cutting of the second-growth timber increases, the potentialities for benefit from tests on this type were considered attractive.

The procedure for seasoning and treating the test ties, and the results obtained, were described in a report prepared by W. R. Cantrell, chemist of the Taylor-Colquitt Company, Spartanburg, S. C. The early work was carried out in a 1-ft. by 10-ft. experimental treating

cylinder which was converted to the vapor seasoning and treating process, according to Mr. Cantrell. This plant was later expanded by the installation of a pilot plant having a 3-ft. by 10-ft. cylinder, which began operation in 1952.

The first work on boxed-heart Douglas fir was carried out with the cooperation of the Southern Pacific and comprised a series of tests for comparing the results obtained in Vapor-Drying and treatment of such ties with those obtained when the ties were handled by the conventional air-seasoning process. For this work, 10 green boxed-heart Douglas fir timbers, 7 in. by 9 in. by 18 ft. in size, were obtained and two 8-ft. crossties were cut from each of them. One group of the 8-ft. crossties was placed in the air-seasoning yard of the Southern Pacific's treating plant at Eugene, Ore., for air seasoning. After nine months of air seasoning, these ties were placed in a commercial charge that had been undergoing air seasoning for the same length of time, and were processed. The other group of 10 green ties were Vapor-Dried and treated within a period of from four to six weeks after they had been cut.

The accompanying table, prepared by Mr. Cantrell, shows a comparison of the processing schedules used and the results obtained on these two groups of ties. It will be seen from this table, said Mr. Cantrell, that the vapor seasoning and treating process required slightly less time than that entailed by the conventionally treated ties even after they had been seasoned for nine months. He also called attention to the fact that the Vapor-Dried ties retained appreciably more preservative and that the average depth of solid black penetration was greater in spite of the fact that these ties at the time of treatmen were about three per cent higher in moisture than the air seasoned ties. In addition, he noted that the checking and splitting of the Vapor-Dried ties was negligible compared to that developed in the air-seasoned pieces.

These ties have been placed in track in the desert country of Arizona, near Yuma. It is felt that the type of climate existing there should give an excellent comparison between the performance of the two groups of ties under rigorous conditions.

A large scale test, comprising 100 green, boxed-heart Douglas fir crossties, was recently carried out for the Union Pacific using the same Vapor-Drying cycle as that shown in the table except that the drying time was increased about two hours because of the fact that the initial moisture content of the ties was about 43 per cent. The total cylinder time used was 13½ hr. The net retention was 9.5 lb./per cu. ft. and the average depth of penetration was 0.9 in.

Determination of preservative penetration was made by borings obtained from two faces of each of the 100 ties. It was found, according to Mr. Cantrell, that 99.5 per cent of these borings had obtained penetration of ½ in. or more. Ninety-two per cent of the borings showed a total preservative penetration of ¾ in. or deeper.

These ties have now been installed in test track. "Because of the reduced checking and splitting and more uniform and deeper penetration of preservative," said Mr. Cantrell, "it is expected that they will show even longer service life than has been obtained even with the better grades of side-cut timber which have been used extensively in the past."

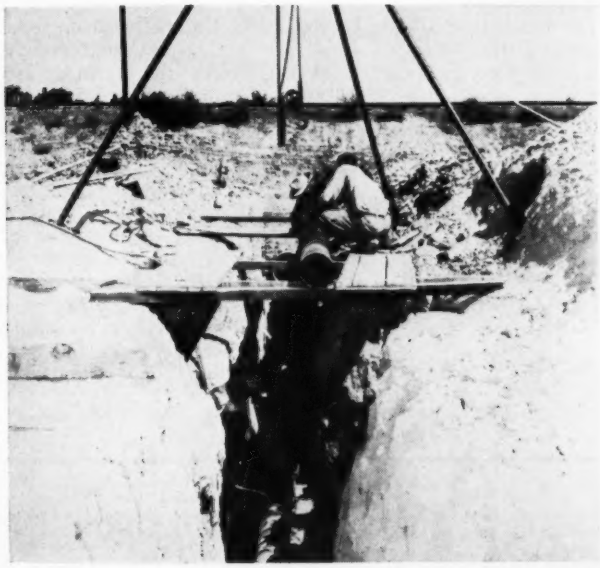
Fire-Gutted Bore Rebuilt in Nine Days

On August 13, 1952, after 11 cars of a Western Pacific freight derailed in tunnel No. 9, near Oroville, Cal., the timber lining of the bore ignited from the heat of a steam derrick used for rerailing work. The fire went out of control. As the flames still raged, a Morrison-Knudson tunnel crew, fresh from the Tehachapi earthquake tunnel repair job in California, was rushed to the site. As soon as the bore had cooled, the M-K men began scaling off loose rock and applying a shotcrete lining. WP men removed five demolished cars and their contents and rebuilt the twisted track. The tunnel was back in service in only nine days.

SMOKE AND FLAMES poured from the mouth of the Western Pacific's tunnel No. 9 following the ignition of the timber lining of the bore by a steam wrecking derrick.

COMPLETELY GUTTED, the bore presented this catastrophic appearance after the blaze. Tunnel was relined with shotcrete, track relayed, and debris removed within nine days after traffic had been halted.

News Briefs in Pictures . . .



SUMMIT CUT, which is on the Burlington's Kansas City "Short Cut," a cut-off in Missouri on its main line between Chicago and Kansas City, was cut through rock formation. Seams of shale made it difficult to obtain the desired standard ½-to-1 slopes, but precision shooting with delayed-action caps and closely-spaced charges resulted in a high degree of fragmentation and blasting accuracy. The cut is as much as 95 ft. deep and its bottom was made 40 ft. wide to permit the use of off-track equipment for maintaining the side ditches in good drainage condition. Freight trains inaugurated service over this line on October 28, 1952, and the road's new streamlined passenger trains, the Kansas City Zephyrs and the American Royal Zephyrs, were put into service on February 1, 1953. The "Short-Cut" is about 70 miles long and shortens the Chicago-Kansas route about 22 miles.

TO PROTECT this underground water line on the Denver & Rio Grande Western from the corrosive action of the alkaline soil, 25-lb. wrought iron pipe was specified. Shown here is a portion of the 400-ft. long, 8-in. diameter, all-welded line being installed beneath the tracks in the road's new yard near Grand Junction, Colo.

THE STEAM locomotive back shop of the Baltimore & Ohio at Glenwood, (Pittsburgh), Pa., has recently been converted into a shop for making heavy repairs to the road's fleet of approximately 700 diesel locomotives. This building, which is 232.5 ft. wide and 638 ft. long, was constructed in 1919. The size and arrangement were adequate for a diesel repair shop, but extensive alterations were required, including the provision of a concrete floor throughout and the construction of a three-level working area at one end where the diesel units are dismantled and reassembled after the component parts have been overhauled. This view was taken from a position over the three-level working area. Other work included the installation of 60-ton and 90-ton drop tables and the necessary facilities and machines for performing the cleaning and repair operations. The existing overhead cranes, including two of 100 tons capacity, were found to be adequate for handling the diesels and their major components. Numerous jib cranes, mostly 1-ton units, were installed throughout the shop. Operation of the shop as a diesel repair facility is on a straight-line basis.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Silicones For Waterproofing Masonry*

What are silicones? To what extent are they adaptable to waterproofing railway masonry? For what other uses are they suitable? Explain.

May Last 10 Years

By Henry L. Kennedy
Manager, Construction Specialties Division, Dewey & Almy Chemical Co., Cambridge, Mass.

Silicones may be described briefly, I suppose, as silicon and oxygen to which other organic radicals are attached. Silicones are excellent water repellents, and there are over 2,000 applications today, including rubber, greases, oils, resins, varnishes, insulation, and electrical motors. Silicones have also been described as "liquid stone", or perhaps still better, "liquid sand". At any rate, it may be said that they are similar in nature to concrete, brick and other masonry materials.

There can be no question whatever as to the effectiveness of properly developed and manufactured silicone products in improving the durability of masonry structures by making those structures water repellent. Basically, the silicone is dissolved in a solvent, where sometimes the percentage of the silicone is one to three per cent, but tests have shown that for really long life, the durability, much higher percentages of silicone are necessary. Some repellents include additional penetrating properties of the silicone, and there are others which also control the flow of the silicone on a vertical surface so that it can be adequately sprayed instead of brushed. Thus, there is a real difference in the performance of the silicone materials available today. The word "silicones" is not enough.

These silicone preparations are applied to brick walls or concrete with either a brush or spray, and the solution should be thoroughly soaked into the masonry. At the end of an hour the masonry will appear to be perfectly dry. However, it requires from 24 to 72 hrs., depending upon the silicone and solvent, for the repellent to cure. At this time, all evidence that silicone has been applied disappears, and water which is applied to the masonry surface will "shed" immediately.

The silicone material will penetrate as much as ¼ in. in depth, and it lines the pores so as to make these pores water repellent. Little information is available on water under hydrostatic pressure, and my best guess is that the silicones will not be effective if the hydrostatic pressure exceeds two or three pounds.

Durability tests of the following materials have been made under freezing and thawing conditions: (1) Plain portland-cement concrete; (2) air-entrained portland-cement concrete; and (3) plain portland-cement concrete treated with a high-silicone material. The plain concrete showed signs of disintegration in five cycles. The air-entrained specimen showed some signs of disintegration at 15 cycles. The plain concrete specimen treated with the high-silicone material has shown no distress now after 50 cycles of freezing and thawing. Certainly there is a tremendous field here for improving concrete structures exposed to conditions of freezing and thawing.

The life of the silicone treatment is a moot question and is of interest to all. From observations of accelerated tests by the author, it would appear that the life of the silicone treatment may be expected to be eight to 10 years, providing the silicone water repellent contains the proper type of silicone,

*Other discussions of this subject were published in the August, 1952 issue of *Railway Engineering and Maintenance*. Because of space limitations the answer by Mr. Kennedy could not be included at that time. It is presented here because of the valuable information contained in it.

Answers to the following questions are solicited from readers. They should be addressed to the Whats' the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the May Issue

1. What are some of the best ways to reduce the need and the cost of work-train service? Explain.

2. What is meant by "stress grade" lumber? What significance should it have to the building supervisor and the carpenter foreman? Can it be distinguished readily from "yard" lumber? How?

3. What, if any, are the special qualifications required of a track foreman in a busy yard? Should he have had special training or experience in any class of work? Explain.

4. What type of expansion bearing is most sutiable for long-span steel railroad bridges? Why? What maintenance attention should such bearings be given to be continuously effective? How often? Explain.

5. What are the advantages and disadvantages of highway trailers used to transport machines from one point to another? How can their use be made most effective? Explain.

6. How can fuel-oil fires be controlled by "gas agitation"? Explain. To what extent is this method adaptable to oil-storage facilities on railroads? How effective is it? Explain.

and the proper percentage of silicone, and is properly fabricated.

The proper type of silicone is important. For example, there are some silicones which are not effective on limestone, although they may be very effective on brick, brick mortars or concrete. In other words, silica is necessary to make some silicones function as they should. There are other silicones which function beautifully on limestone, where no silica is available, and make that limestone just as water repellent as brick or concrete.

In determining the proper use today, at least of the silicone repellents which are available, it is probably best to apply experimental panels and to watch the performance. On the other hand, a manufacturer that has a highly trained technical staff which is cognizant of the uses and misuses of the various silicone materials may be of real service to the user and save much time.

Vibration of Air-Entrained Concrete

To what extent, if any, does vibration reduce the air content of air entrained concrete? Explain.

Up Air Content, and Vibrate

By George Paris
Structural and Railways Bureau,
Portland Cement Association, Chicago

This question arises quite frequently when air-entrained concrete is used. It is particularly timely inasmuch as there is a tendency to under-vibrate air-entrained concrete to avoid losing some of the entrained air. There is a possibility that some air will be removed when vibration is used, especially if it is prolonged. However, consolidation of concrete by vibration is just as important and desirable for air-entrained concrete as for ordinary concrete.

The practice of under-vibrating air-entrained concrete may result in just as much damage as if it were over-vibrated. This is especially true with low-slump concrete which needs proper vibration to compact it. Generally when there is evidence of over-vibration, it is a sign that the slump and not the vibration needs to be reduced. To offset the loss of air which occurs through vibration the mix should be designed to entrain enough air initially to produce the required final air content.

The reduction in air content when vibration is used depends primarily upon the period of vibration. Prolonged vibration reduces the air content more than short periods. The air content may be reduced as much as 50 per cent for periods of vibration lasting three minutes or more. For periods up to one minute the air content may be reduced about 15 to 20 per cent. This reduction amounts to about one or two per cent air. Thus if six per cent air were entrained initially, the final air content of the concrete in place would be about four or five per cent.

The reduction in air content due to vibration also varies with the slump and the method of vibration. More air is removed with high-slump concrete than with low-slump concrete. Internal vibration removes more air than external vibration.

In closing, I want to emphasize that vibration is just as important with air-entrained concrete as it is with ordinary concrete. The maximum reduction in air content due to vibration of medium-low slump concrete will be about two per cent. This should be taken into account along with other factors when the mix is designed to produce air-entrained concrete having the required air content after it has been vibrated.

Installing Tie Plates Out-of-Face

What is the best method of installing tie plates out-of-face when adzing machines are used? How many men are necessary for each operation involved, and how should they be distributed? Explain.

Machines Speed-Up the Work

By J. R. Scofield
Assistant District Engineer,
New York Central, Detroit, Mich.

This is a very timely subject and should be of interest to all, as it is standard practice to renew tie plates out-of-face where the original plates were too small, have deteriorated on account of corrosion, or when single-shoulder plates are to be replaced with double-shoulder plates. This work can be done under traffic on multiple-track territories, and it is usually unecessary to detour trains. In organizing this work, we have found that a total of 40 men will obtain maximum unit production whereas a larger gang is uneconomical. To obtain this effectiveness, our gang is equipped with two spike pullers, one rail crane, two adzing machines, one gaging tool, two spike hammers, and six plate lifters.

The two spike pullers, handled by three men each, lead the parade by removing the spikes. As soon as they are out of the way of the joint at the starting point, it is uncoupled and one man follows the spike pullers, removing anchors. Next a self-propelled crane, manned by an operator and a helper, line the rail in towards the center of the track far enough to avoid interference with the adzing machines.

Three men remove the old tie plates with plate lifters. Two men drive down stub spikes followed by three men setting tie plugs and driving them down. Two adzing machines, equipped with heads suitable for the plates that are to be installed, and operated by one man each, prepare the bed for the new tie plates. Two men follow the adzers applying creosote to all scored ties, and three men bring up the rear applying new plates with plate lifters.

When plates have been applied to the stretch of track to be taken in the first "bite," the crane lines the rail back into place on the new plates. Two men, one with a gaging tool and the other a lining bar, shift the rail and plates into approximate gage. Two men follow with a track gage, spiking the rail to gage at intervals and two other men set the remaining spikes with 4-lb. sledges. Two men drive these spikes home with spike hammers, and one man finishes the job by replacing the rail anchors. These operations, as shown in the table, account for a total of

33 men who are supervised by one foreman, two assistant foremen, one mechanic and a timekeeper. Two flagmen complete the consist of the 40-man gang.

Gang Organization—40-Man Gang

Operation	*Men*
Operate spike pullers (2)	6
Remove anchors	1
Operate crane	1
Crane helper	1
Remove plates	3
Replace plates	3
Drive down stubs	2
Set and drive plugs	3
Adzing machines (2)	2
Apply creosote	2
Gaging tool	1
Lining bar	1
Gage spike	2
Set remaining spikes	2
Operate hammers (2)	2
Replace anchors	1
Flagmen	2
Foreman	1
Assistant Foremen	2
Mechanic	1
Timekeeper	1
Total	40

We have used the above method very successfully working under slow orders with standard slow board set. The amount of work done from day to day does not vary, as there is little time lost in getting the track ready to let trains pass. Production should be about 50 plates per man per day or a total of 2,000 plates per day. We have found that the self-propelled crane, which can be removed from the track quickly on a set-off, saves about six men. This crane is also used for setting the other pieces of mechanical work equipment on and off the track whenever work must be interrupted so as to allow trains to pass.

Need Enough Adzing Machines

By W. A. Schubert
Division Engineer,
St. Louis-San Francisco, Chaffee, Mo.

During 1949 and 1950, we changed out several hundred thousand single-shoulder tie plates under 112-lb. rail, and replaced them with double-shoulder tie plates out-of-face. The work is similar, whether it involves track not previously plated or to be replated, with the exception that additional time is consumed in the latter case removing the smaller tie plates. Also, where no plates existed previously, the adzing might be much heavier and more than one adzer would be needed.

In our operation, a district gang, such as those now being used on our railroad, and two section gangs were used, with a total of 23 laborers organized as shown in the table. This work was carried on two days each week, since it was done with regular maintenance forces and the men were occupied with other work the balance of the week. The distribution of plates was handled by the section gang on whose section the work was being done. These plates were distributed the day before assembling the gangs that were to change out the plates. The location of work was covered by a train order, and "live flags" were placed.

Gang Organization—23 Men

Operation	*Men*
Flagging	2
Pulling spikes	4
Removing rail anchors	1
Lining out rail	3
Removing tie plates	1
Setting tie plugs	1
Driving tie plugs	1
Operating adzer	1
Applying creosote	1
Placing new plates	1
Lining in rail	3
Spiking	4
Total	23

As soon as men arrived on the scene, they "doubled up" on pulling spikes and doing other work to make sufficient room to get the adzing machine in operation. When this was done, the gang was divided as shown above. Since the work was performed in curve territory, the inside rail was generally lined off the end of the ties, and the outside rail towards the center of track.

After making room for adzing machines, work progressed in a smooth, even operation, with never over six to eight rails being lined off the seat of the plates, since the rail was not uncoupled. The front gang lined the rail out, and the rear gang lined the rail back on the new plates. (The adzing machine worked in between these two gangs). They were followed by a gang which spiked the track "safe," but not fully. In this manner, train delays were kept to the minimum, since it took only a few minutes to make the track safe for the passage of trains. The full spiking and reapplication of rail anchors were done near the close of the day's work by men from the head gang. The work was confined to one side each working day, bringing up the other rail on alternate days. The success of the entire operation depends on the speed of the adzing machine.

At the time this work was done, we did not have available a power spike puller and power spike driver. These machines would have been a great help and would have reduced the number of men pulling spikes from four to two and the number of men spiking from four to two. This would also have required another adzing machine since the speed of the entire operation would have been greater. However, with the set-up as outlined, we applied an average of 1800 tie plates in five hours' actual working time.

Keep Units Moving

By Track Foreman

The job of changing tie plates is largely a matter of organizing a gang in such a way as to keep the work moving forward steadily. We generally line up our men as shown by the accompanying table. The men with claw bars can pull the spikes which the spike puller misses and throw all spikes back out of the way of the adzing machines. We usually get better gage by having six men with spike mauls and three track gages spike every third tie to gage and let the air-hammer men spike the remaining ties and do all the "leg" spiking. A foreman handling this type of work where his men are strung out over many rail lengths should have at least one assistant foreman.

Gang Organization—48 Men

Work Done	*Men*
Foreman	1
Assistant foreman	1
Flagmen	2
Run spike puller	3
Take off rail anchors	1
Use claw bar	3
"Rush out" rail	4
Take off tie plates	1
Stick tie plugs	2
Drive tie plugs	2
Run cribbing machine	2
"Deadhead" men	2
Run adzing machines (2)	4
Apply creosote	1
Lay tie plates	2
Rush rail back in bed	2
Straighten tie plates	1
Spike to gage	6
Rail rusher for gagers	1
Run air compressor and hammers	3
Set spikes	3
Put on rail anchors	1
Total	48

Using Distilled Water on Diesels

What are the advantages and disadvantages of using distilled water in diesel locomotives? How does its use compare in effectiveness and economy with usual methods of water treatment? Explain.

May Require Greater Storage

By I. C. Brown
Water Engineer, St. Louis-San Francisco, Springfield, Mo.

Distilled water affords a water supply with minimum mineral content and is highly desirable as a supply for diesels if properly treated to prevent corrosion. Under special conditions distilled water may be available at a cost comparable to that of demineralization or other methods of treatment. As a general rule, however, it has been found more expensive than other methods of treatment which remove scale and sludge-forming minerals from the water. Frequently the rate of distillation is such that more storage capacity is required to supply the diesel demand than with treating plants having greater capacity per hour.

Complete demineralization of water for diesel use produces the nearest approach to distilled water in quality. However, the plant investment is high and considerable labor is required for regeneration. Sodium zeolite treatment is less expensive and, where the quality of the raw water supply is suitable, an excellent diesel water supply can be provided at lower cost than for complete demineralization. Water produced by either of these methods must, of course, be treated so as to prevent the possibility of corrosion in cooling systems or steam generators.

Any of the above methods is to be preferred to internal-type treatment which, while low in first cost, is extremely difficult to apply accurately in proportion to the quantity and quality of the water used. Plant-controlled treatment of a type best suited to the available water supply is the most effective answer to incrustation and corrosion of diesel cooling systems and steam generators.

Are Rail-Anchor Shims Practicable?

To what extent, if any, are shims suitable for prolonging the life of rail anchors? Are there disadvantages in their use? Explain.

Performance Good So Far

By T. M. von Sprecken
Assistant to Chief Engineer, Southern, Washington, D. C.

We have been troubled with a considerable number of rail anchors becoming loose and not properly performing their functions. When this has occurred, the practice has been to replace them with new anchors. To do so is expensive.

Recently we established a practice of reforming some types of anchors and restoring them to service. This was found practical but not cheap. In addition to the cost of reforming them there is the expense of collecting the loose anchors, loading and shipping them to a central shop where more money is spent unloading, reforming and redistributing them to points of use.

More recently we have tried out the use of small metal shims to tighten loose anchors in the field. These shims weigh about ½ oz. and a small supply can easily be carried by the gang on a motor car. When a loose anchor is found it is knocked off, a shim is applied to it, and then the anchor is replaced. These shims have not been in use long enough for any definite conclusion to be drawn as to their final worth. All that can be said now is that those installed are performing satisfactorily. They cost much less than new or reformed anchors and their use does eliminate the expense of handling and shipping reclaimed anchors. If they finally prove a success, we expect to make real economies.

In advanced discussion of the use of these shims some of our men were of the opinion they would not be effective because the loose anchors might have lost their "spring." This has not been the experience up to this time.

The shims used were of varying thicknesses. Those of No. 14-gauge metal (about $\frac{1}{12}$ in.) seem to work best on the majority of our loose anchors.

Use with Secondhand Anchors

By R. H. Beeder
Assistant to Chief Engineer, Santa Fe, Chicago

For a number of years we have been following the practice of reusing our secondhand, one-piece, drive-on type of rail anchors on lighter weights of rail than that for which these anchors were designed. This is done by using metal shims between the jaws of the anchors and the top of the rail base. These metal shims are usually 1¼ in. by 1½ in. and of the proper thickness to give a tight fit between the anchor and the top of the rail base. They are ordinarily sheared from mild-steel flatstock, but scrap pieces of steel of almost any specification may be used to give a tight-fitting rail anchor. The accompanying table, based on past practice, gives the thickness of shim which should be used with anchors for various weights of rail.

Anchor Shims for Various Weights of Rail

Original Weight Rail for which Anchor Designed	*Weight of Rail on which Anchor Used*	*Thickness of Required Shim*
90 lb.	70 lb.	¼ in.
90 lb.	85 lb.	⅛ in.
110 lb.	85 lb.	¼ in.
110 lb.	90 lb.	$\frac{3}{16}$ in.

We have used several hundred thousand rail anchors with shims in this manner on some of our lighter weights of rail, and we have had no more failures with this practice than we have had with anchors without shims that are applied to rail of the weight for which the anchors have been designed. In a recent test using 90-lb. anchors equipped with shims applied to 70-lb. rail, three shimmed anchors held the rail against an expansion jack despite the fact that, in the process of jacking the rail, five heat-treated track bolts were sheared. We expect our shimmed anchors will serve us as long on secondary main tracks as they did originally in our high-speed main tracks.

Part of the successful reuse of secondhand rail anchors of both the drive-on and wrench-applied

type can be attributed to our process of reforming practically all of these types of rail anchors at our centrally located reclamation plant. Our secondhand rail anchors are reformed by forcing them into a templet or jig with a pneumatically operated ram. The steel templet is constructed in accordance with the exact dimensions of each individual pattern of rail anchor in its original shape. Under present handling two men are able to reform approximately 5000 rail anchors during each eight-hour shift at a fraction of a cent per anchor.

Knows of No Disadvantages

By R. W. Putnam
Engineer Maintenance of Way and Structures, Southern Pacific, San Francisco, Cal.

Rail anchors perform one function only, namely to stop the rail from running or moving. When anchors become loose on the rail, either from misapplication, overdriving, or under ordinary mechanical wear, they cease to perform this function. The type of anchor we use can be removed from the rail by use of a maul and when reapplying, if the anchor for any reason is loose, a small steel shim 1⅛ in. wide by 1⅞ in. long is used on top of the base of the rail and the anchor is then reapplied. These shims are carried in four thicknesses—1/16 in., ⅛ in., 3/16 in. and ¼ in. With a little judgment, the right size of shim can be chosen so as to take up the slack in the anchor and make a tight fit on the rail. Choosing a shim that is too large serves only to spread the anchor. The use of shims is a cheap and economical way of reclaiming anchors which would otherwise be scrap.

We are not aware of any particular disadvantage in the use of rail-anchor shims. They hold as well as new anchors. However, I doubt if certain types of rail anchors could be successfully reclaimed by this method. We have also been very successful in reusing rail anchors which had been designed for 6-in. base widths on rails having a narrower base. It is possible to reuse the larger anchors for smaller rail in all our secondhand relay work by applying larger shims or a combination of shims and then driving the anchor onto the base of the rail until it becomes tight.

Too Difficult to Use

By George S. Crites
Division Engineer (Retired), Baltimore & Ohio, Baltimore, Md.

Refitting deformed or out-of-section rail anchors to new or out-of-section rail by the use of shims is never quite satisfactory because a secure and uniform grip can not be obtained for all anchors regardless of the care used in applying the shims and the anchors.

Where flat shims are used, the variance in the degree of wear, corrosion or distortion of the anchors prevents a uniform fit on rails of the same section and the fit is of greater variance when rails are unevenly corroded. In either case, anchors work loose even when shimmed and applied with the greatest of care.

If tapered shims are used to take up variations in the sections of anchors and rails, it is difficult to set the shim just right for each anchor and if an attempt is made to drive the shim into place, the anchor is usually driven out of line. Anchors applied in this manner usually work loose and drop off.

It has been found that high-carbon-steel one-piece anchors can be cold or hot forged to desired sections with proper dies and that the carbon-steel housings of some two-piece anchors can be cold forged to sections which give a very tight fit to any section of rail that is reasonably close to that for which such anchors are designed.

There is no reason why high-carbon, spring-steel one-piece rail anchors could not be heated, reformed, and then retempered.

Where to Use Switch-Point Locks

Where should switch-point locks be used on main-track switches? Why? At what points, if any, is their use objectionable? Explain.

Apply Where Hazard Greatest

By N. W. Kopp
Division Engineer, Illinois Central, Jackson, Tenn.

The primary function of a switch-point lock is to protect against failure of any part of the switch stand or rod and therefore should be used in locations where there is a hazard that could cause a failure of this part of the switch. A facing-point switch located within 200 ft. of a road crossing, either public or private, should be equipped with a switch-point lock on high-speed territory, because there is a definite hazard of accident at such locations caused by vehicular traffic being struck by high-speed trains resulting in the striking of the stand by flying parts of the vehicle. Economics are involved in any installation of switch-point locks on facing-point switches in other than high-speed territories and local conditions would govern their application. Their use elsewhere would not be objectionable unless costs would not justify their use. A careful study of each territory to be equipped with switch-point locks is necessary to determine whether or not their installation can be justified at points other than those adjacent to road crossings.

Use Near Road Crossings

By Section Foreman

Switch-point locks are safety devices which are operated either electrically, mechanically or manually. They are needed more at one point than another. On multiple-track railroads, they should be installed on all facing-point switches where there might be a danger of the switch stand becoming knocked off. On single track they should be installed on all switches similarly located.

They have been found very effective when applied to switches near road crossings. Should an auto drive onto such a crossing just ahead of a train, be struck and carried as far as the switch, the stand might easily be broken, leaving the switch-points "floating." A switch-point lock, if applied to this switch, would hold the points securely in position and prevent the closed point from gapping and possibly causing a serious derailment sometime in the future.

Switch point locks are objectionable inside of larger yards because yard switches are used continually. Operation of a switch-point lock would delay switching operations considerably. Switch-point locks should not be installed on spring switches.

Waterproofing Masonry Structures

What basic characteristics should a waterproofing material for masonry structures possess for railway use? Explain.

Use the Proper Material

By G. E. Robinson
Engineer of Structures,
New York Central System,
Lines West of Buffalo, Chicago

There are three ordinary conditions under which the waterproofing of masonry is used on the railroads, and the basic characteristics are different for each.

For the waterproofing of a masonry bridge deck, the essential requirements are that the waterproofing be able to withstand a head of, perhaps, two feet, and that it be so detailed that the expansion and contraction of the various units of the deck will not destroy the integrity of the waterproofing. This also applies to the expansion of the deck at the end of the bridge, whether the movable joint is vertical at the face of the backwall or horizontal over the top of the backwall. General practice calls for the use of membrane waterproofing for this service, and all the elements of the membrane should be of mineral origin or be completely protected by a coating of mineral origin, so that the expected life of the material will equal the life of the span.

The bitumen should have such characteristics that it will not soften to any harmful extent under the highest temperature which is to be expected under the amount of ballast used, and also such that it will not become brittle to the point of being fracturable at the lowest temperature anticipated. The tensile components of the membrane should be strong enough to withstand the strains due to the development of temperature cracks during the curing of the concrete. Those elements of the membrane which are intended to provide toughness shall be capable of withstanding, without puncture, pressures from small pieces of gravel which may reach the membrane through fractures in the protection coat.

If I may be permitted to depart from the main subject, I would like to state that in this particular type of waterproofing installation there is one feature which is far more important than the quality of the materials, and that is that the details of design and the workmanship be such that the water cannot get behind the waterproofing. The number of waterproofing jobs which have been rendered ineffective by poor details far exceeds the number that ever were ruined by poor materials.

The second class of waterproofing with which we have to deal is that applied on the below-ground side of masonry. The material for this purpose should be such that the waterproofing coat will be impenetrable under the head which would be produced if the fill were saturated for its full height. This requirement may seem to be extreme when the bridge abutment is supporting a fill which rises far above the general ground level, but the condition frequently occurs when a fill is wholly or partially made of clay. The material should have a long life when buried in the ground and should maintain an unbroken surface in the presence of water. The application is less difficult if the material can be satisfactorily applied on a damp surface, but this should not be a controlling factor in its selection.

The third class, surface waterproofers for exposed surfaces, should be considered in two categories: (1) Those that are penetrable; and (2) those that are not. Both types should present a pleasing appearance after curing and should be used on the surface of masonry which is not watertight on the buried surfaces. This type will permit any moisture which works its way to the surface to be evaporated and will minimize the chances of damage from frost. The material should discourage the entrance of water to as great an extent as is possible while still permitting the evaporation. The impenetrable type is much to be preferred in all cases where the absence of interior moisture can be assured, but if it were to be used over damp masonry, or masonry which later became damp, its impenetrable qualities would become detrimental by barring the escape of the moisture with subsequent damage from frost. The above qualities are very difficult to obtain, especially for use on concrete. Concrete is a material of varying porosity, which means that any material having color other than the color of the concrete and applied in a vehicle which carries it into the masonry by capillary attraction will produce a mottled appearance. Another reason for using a colorless or concrete-colored waterproofer is that masonry usually becomes scarred in the course of its long life and, if the abrasion uncovers a surface of a different color, the effect is to give undue emphasis to the damage and create a very unpleasing appearance.

Properties May Vary

By W. G. Harding
Architect, Wabash, St. Louis, Mo.

Because there are many different methods of waterproofing different structures I will confine my discussion to the waterproofing of the foundations of buildings.

Ordinarily when the subject of waterproofing is brought up, one immediately thinks of a bituminous material that is usually applied to the foundations of structures to prevent the penetration of moisture. These materials must have several properties to be able to qualify as waterproofing materials. These properties include the ability: (1) To adhere to the material under treatment; (2) to exclude water; (3) to withstand temperature changes; and (4) not to deteriorate with age.

It is obvious that if a material will not adhere to a surface, it cannot effectively serve as a waterproofing material. Neither will it prove satisfactory if it does not exclude water or water vapor. The physical properties of all bituminous materials change to some extent when subjected to changes in temperature. If the change in properties is too great, it may result in the material being unsuitable for the service for which it is to be employed. The material with suitable properties at normal temperature may become unfit for use at higher or lower temperatures. Properties that may be affected by temperature changes include hardness, ductility, brittleness, and bond.

The physical changes that occur because of the passage of time are varied and in some ways overlap those occurring because of temperature changes. Other changes resulting from aging include brittleness due to evaporation of the solvent, wearing away of the coating by weathering, leaching or absorption, or by freezing and thawing.

In addition to the above, there are numerous waterproofing mate-

rials on the market for use in above-grade waterproofing. They are made of inorganic gels, stearates, silicones or oils and may have color or be colorless depending upon whether a decorative effect is desired. Most of these materials are supposed to fill voids in the surface and impede the penetration of moisture and at the same time permit any water vapor which is present to escape from the masonry by breathing action.

Some Are Too Expensive

By George S. Crites
Division Engineer (Retired),
Baltimore & Ohio, Baltimore, Md.

Chemically, waterproofing materials for masonry structures should be impervious to acids, moisture, oxidation, caustics and actinic rays. Physically, they should be resistant to abrasion and erosion; they should not get too soft when warm nor too hard and brittle when cold; and they should always be plastic enough to resist cracking under reasonable movements of the masonry and yet not fluid enough to run or spread out when subjected to higher temperatures or when placed under considerable pressure.

The early Egyptians found that asphaltic compositions took care of all these conditions in their dry climates providing the sealing agent was not exposed to the sun and the weather. However, asphalt does change and loses some of its properties when weathered in sunlight. It will also soften and run when subjected to moderate heat and pressure.

Most pitches and tars are not subject to change under ordinary atmospheric reactions and for weatherproofing most masonry structures can be prepared with the desired fluid consistencies to avoid running. To get this desired fluidity, it is often necessary to add membranes or body materials such as those made from asbestos or similar inert minerals or fibers.

Quite a few synthetic plastics now being compounded have about all the qualities needed in waterproofing materials for masonry structures but they are too expensive for ordinary use. Thus, at this time, it is probable that pitch or tar preparations will prove to be the most economical of satisfactory applications until such time as more effective materials are economically feasible.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

Tony Tagliafer, superintendent of maintenance of way of the Monongahela Connecting at Pittsburgh, Pa., has been appointed assistant to the general superintendent.

Paul E. Feucht, executive vice-president of the Chicago & North Western System at Chicago, and an engineer through training and experience has been named president, succeeding **Rowland L. Williams,** who has retired after nearly 50 years of service.

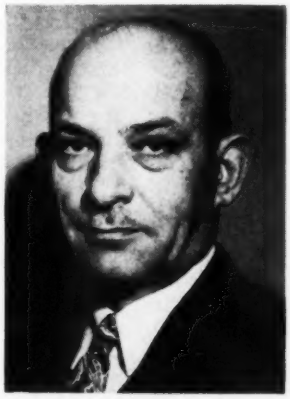
Mr. Feucht was born on January 4, 1900, at Indianapolis, Ind., and received his engineering education from Purdue University. He entered the service of the Pennsylvania in May 1925 and served successively as an assistant on the engineering corps, assistant supervisor of track, supervisor of track, division engineer, superintendent, superintendent of passenger transportation, general superintendent, general manager and, in 1946, was named vice-president of the Western region of the Pennsylvania at Chicago. He became executive vice-president of the C&NW system in 1951. Mr. Feucht has also succeeded Mr. Williams as president and director of a number of subsidiary companies, including the Peoria & Pekin Union.

Alan T. Danver, executive assistant of the Rutland at Rutland, Vt., and formerly chief engineer, has been named treasurer of that road. Mr. Danver was born at Stamford, Conn., on June 21, 1893, and was graduated from Tufts

Alan T. Danver

College with the degree of B.S. in civil engineering in 1915. He entered railroad service in 1915 as assistant bridge inspector with the Boston & Maine and later served the Boston & Albany as draftsman, structural designer and assistant engineer, successively. He joined the Rutland in 1925 as an engineering assistant and was appointed principal assistant engineer in 1927, principal assistant evaluation engineer in 1931, and chief engineer in 1938. He was appointed executive assistant in October 1951. Mr. Danver will continue the duties of the latter position in addition to his new duties as treasurer.

William T. Elmes, whose appointment as general manager of the Pittsburgh & Lake Erie at Pittsburgh, Pa., was recently announced (RT&S, Jan., p. 70) was born June 23, 1904, and received his Bachelor of Science degree in 1926 and a Civil Engineering degree in 1929—both from Pennsylvania State College. He entered



William T. Elmes

railroad service with the P&LE in 1926 and was engaged in concrete and steel design work until 1936 when he was promoted to assistant supervisor of track. He was appointed roadmaster in 1938, which position he held until 1941 when he entered the service as a colonel heading the Military Supply Branch, U. S. Corps of Engineers, Pittsburgh and Louisville district. From 1943 until 1945 he served as chief engineer, Military Railway Service, European Theater of Operations, and in 1946 returned to the P&LE as chief of the research department. Mr. Elmes was named assistant chief engineer in 1948, and on October 1, 1949, was appointed superintendent, which position he held until his recent promotion to general manager.

Charles G. Stewart, formerly assistant chief engineer of the Pittsburgh & Lake Erie, who recently retired as general manager of that road at Pittsburgh, Pa. (RT&S, Jan., p. 70) was born November 27, 1885, at Hockingsport, Ohio. He received his Bachelor of Science degree from Ohio University in 1910, and his Civil Engineering degree from Cor-

(*Continued on page* 166)

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nell University in 1912. He entered railroad service in the latter year on the engineering corps of the Pennsylvania at Cleveland, Ohio, and in 1916 entered the service of the Baltimore & Ohio as an assistant supervisor on the Chicago division at Walkerton, Ind. In 1917 he was promoted to assistant district engineer at Cincinnati, Ohio, and from 1918 until 1923 served as assistant division engineer at Flora, Ill., and Washington, Ind. In 1923 Mr. Stewart left railroad service to become associated with the Jones & Laughlin Steel Co., Pittsburgh, as engineer of building maintenance, and from 1926 until 1927 was engaged in real estate development work at Wildwood, Pa. In the latter year he entered the service of the P&LE as an engineering draftsman, which position he held until 1940 when he was promoted to assistant chief engineer at Pittsburgh. Mr. Stewart was named general manager in 1942.

Charles G. Stewart

Karl A. Borntrager, general manager of the Michigan Central district of the New York Central at Detroit, Mich., and an engineer by training and experience, has been elected vice-president in charge of operations and maintenance for the system with headquarters at New York to succeed **James J. Frawley,** who will continue as vice-president with special duties assigned by the president. **Frank J. Jerome,** executive vice-president at New York, and also an engineer by training and experience, has become vice-president with jurisdiction over engineering, development, research and real estate. In this position Mr. Jerome, in addition to other responsibilities, will absorb the duties of **Boynton S. Voorhees,** who has retired, and the position of executive vice-president has been discontinued.

Mr. Borntrager was born at Townville, Pa., on January 2, 1892, and graduated in civil engineering from Ohio State University in 1916. He entered railway service in April 1917 as an assistant engineer in the valuation engineer's office of the Toledo & Ohio Central (now the Ohio Central division of the NYC) at Columbus, Ohio, and in June 1923 was promoted to assistant division engineer at Charlestown, W. Va. In January 1925 he was advanced to assistant engineer in the chief engineer's office at Columbus, and three months later was appointed resident engineer on construction at Toledo, Ohio. He was promoted to assistant engineer in the office of the executive vice-president at New York in May 1926, where he remained until November 1939 when he was appointed superintendent of the Ohio Central division at Columbus, and subsequently served in that capacity at Rochester, N. Y., and Albany. In April 1947 Mr. Borntrager was named assistant to the vice-president at Chicago, and the following September was appointed manager of freight transportation at New York. He was made general manager of the NYC's Big Four district at Cincinnati in March 1950, and in November 1950 was transferred in a similar capacity to the Michigan Central district, where he remained until he received his recent appointment.

Karl A. Borntrager

Mr. Jerome was born at Painesville, Ohio, on May 26, 1890, and was graduated from Williams College in 1911, and from Massachusetts Institute of Technology in 1914. He entered railway service with the New York Central on July 6, 1914, as a transitman at Elyria, Ohio, and in March of the following year he was transferred to Toledo, Ohio. In 1917 he was appointed assistant engineer at Chicago, and on August 20, 1923, he was promoted to trainmaster at that point. He was appointed division engineer at Chicago on November 1, 1927, and in April 1938 he was promoted to engineer maintenance of way of the Michigan Central at Detroit. On October 1, 1939, he was advanced to assistant chief engineer of the New York Central System (including the Michigan Central with headquarters at Chicago. One year later his jurisdiction was extended to include the Big Four and the Peoria & Eastern (also controlled by the NYC). In April 1943 he was promoted to chief engineer, and in 1945 was named assistant to the executive vice-president at New York. Mr. Jerome was advanced to vice-president, operations and maintenance, in 1947, and to executive vice-president in 1951.

Frank J. Jerome

Engineering

James C. Boyle, chief engineer of the Central Vermont, has retired after 37 years of service.

E. H. Barnhart, division engineer on the Baltimore & Ohio at Garrett, Ind., retired on January 31.

Lyell S. Rose, special engineer on the Erie at Cleveland, Ohio, has retired after 47 years of service.

C. W. Lester, has been appointed engineer maintenance of way and assistant supervisor of bridges & buildings of the Illinois Terminal at St. Louis, Mo.

N. E. Smith has been appointed division engineer of the Chicago, Milwaukee, St. Paul & Pacific at Minneapolis, Minn., succeeding **E. W. Bolmgren,** who has retired.

E. R. Robertson, Jr., leading draftsman on the Pittsburgh & Lake Erie at Pittsburgh, Pa., has been promoted to assistant engineer, succeeding **J. H. Twitmyer,** deceased.

W. T. Hammond, division engineer on the Eastern division of the Pennsylvania, has been promoted to engineer maintenance of way of the Central region, with headquarters as before at Pittsburgh, Pa.

John P. Hiltz, Jr., engineer maintenance of way of the Delaware, Lackawanna & Western, has been appointed to the newly created position of chief engineer, maintenance of way, of the New York Central System, effective February 1. Mr. Hiltz will be located at New York. The announcement of this appointment stated that the creation of the new position "is incident to a separation of maintenance of way functions from purely engineering functions throughout the system."

L. E. Mitchell has been appointed special projects engineer reporting to the vice-president of operation of the Ca-

(*Continued on page* 168)

Look at the many advantages of multi-purpose Macbeth Spike Anchors over other types of rail fasteners!

REDUCES MECHANICAL WEAR:

Macbeth Spike Anchors clamp rails, tie and tie plates solidly together with a force of approximately 4½ tons. No hold down spikes or conventional wear-resistant devices required because *the tie plates can't shift.* Mechanical wear is reduced because there is no relative motion between the tie and tie plates.

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Railway Personnel (Cont'd)

nadian National with headquarters at Montreal, Que. Mr. Mitchell will be assigned duties relating to the St. Lawrence Seaway project and other special undertakings.

Tom R. Snodgrass, chief engineer of the Monongahela Connecting at Pittsburgh, Pa., has assumed all duties formerly performed by **Tony Tagliafer** as superintendent of the maintenance of way and engineering departments. Mr. Tagliafer, as noted elsewhere in these columns, has been appointed assistant to the general superintendent. **John LeDonne,** draftsman, has been appointed track engineer, and **R. McCombs** has been appointed civil engineer.

R. P. Puddester, principal assistant engineer for the Atlantic region of the Canadian National, has been promoted to engineer maintenance of way, with headquarters as before at Moncton, N. B. The position of principal assistant engineer has been abolished. Mr. Puddester has succeeded **E. W. G. Chapman,** who has been named assistant chief engineer at Moncton to succeed **G. R. Doull,** who has been appointed regional chief engineer to replace **T. L. Landers,** who has retired. **R. M. Wickwire,** structural designer at Moncton, has been advanced to building engineer to succeed **J. Pullar,** who has retired.

Walker Paul, assistant to the chief engineer of the Southern Pacific at San Francisco, retired at his own request January 15 after more than 30 years of service. **William M. Jaekle,** assistant engineer maintenance of way and structures, has been promoted to the newly-created position of assistant chief engineer with headquarters as before at San Francisco. **Harry M. Williamson,** division engineer of the Portland division at Portland, Ore., has been promoted to assistant engineer maintenance of way and structures at San Francisco succeeding Mr. Jaekle. **Godfrey J. Lyon** has been named division engineer at Portland succeeding Mr. Williamson. Victor R. Cooledge, engineer of structural design, has been promoted to assistant engineer of bridges, with headquarters as before at San Francisco. **Richard S. Bennett** has been named engineer of structural design, succeeding Mr. Cooledge, and **Joseph A. Holmes** has been appointed construction engineer at San Francisco.

William Baerthlein, supervisor of track on the New York Central with headquarters at Clearfield, Pa., has been promoted to assistant division engineer on the Buffalo division at Buffalo, N. Y., to succeed **H. B. Rutherford,** who has been advanced to division engineer on the St. Lawrence, Adirondack and Ottawa divisions at Watertown, N. Y., to replace **C. C. Lathey,** who has been transferred to the Electric division at New York. **Wolters Ledyard,** supervisor of track at Watertown, has been promoted to assistant division engineer on the Pennsylvania division at Jersey Shore, Pa., to succeed **G. S. Wooding,** who has been transferred to the Mohawk division at Albany, N. Y., to replace **C. M. Gregg,** who has been advanced to division engineer on the Boston & Albany with headquarters at Boston, Mass.

J. M. Nicholson, assistant chief engineer of the Long Island at Jamaica, N. Y., has been promoted to chief engineer to succeed **T. W. Pinard,** who has retired.

Mr. Pinard began service with the Pennsylvania as a draftsman in 1906, at which time he was taking night courses in architectural and structural design at Drexel Institute. The following year he went with a private contractor and subsequently worked in an engineering capacity for other concerns. Returning to the railroad in 1912 as a designer in the maintenance of way department, he was appointed assistant engineer, maintenance of way, at Pittsburgh, Pa., in 1920 and was later advanced to assistant chief engineer maintenance of way at Chicago. In 1929 Mr. Pinard returned to the New York zone of the PRR as engineer of bridges and buildings, and on May 1, 1949, was appointed chief engineer of the Long Island.

Richard B. Birkett, whose promotion to assistant to the division engineer on the St. Louis division of the Illinois Central at Carbondale, Ill., succeeding **A. A. Logue,** retired, was recently announced (RT&S, Jan., p. 70), was born December 27, 1922, at Burlington, Wis. Upon graduation from the University of Wisconsin in 1947, he entered the service of the IC as a junior engineering aid at Carbondale. On July 16, 1948, he was promoted to assistant supervisor of track at Waterloo, Iowa, in which position he remained until July 1, 1950, when he was named supervisor of track at Ft. Dodge, Iowa—the position he held prior to his recent promotion on December 1, 1952.

Richard B. Birkett

J. E. Wiggins, Jr., assistant engineer of water supply on the Southern, has been promoted to engineer of water supply, with headquarters as before at Washington, D.C., to succeed **A. B. Pierce,** whose retirement was announced in the January issue.

J M. Minturn, Jr., who has been promoted to division engineer on the Pennsylvania-Reading Seashore Lines, Atlantic division, of the Pennsylvania at Camden, N. J. (RT&S, January, p. 70), was born at Cincinnati, Ohio, on March 5, 1911, and, following graduation from the University of Cincinnati in civil engineering, he entered the employ of the Pennsylvania on January 16, 1935, as an assistant on the engineer corps at Fort Wayne, Ind., subsequently serving in that capacity at various other locations. On February 24, 1939, Mr. Minturn was appointed assistant supervisor of track on the Philadelphia Terminal division and on July 23, 1941, was promoted to supervisor of track on the Cleveland division, transferring to the Philadelphia Terminal division on July 1, 1945. He was named assistant division engineer at Altoona, Pa., in 1951, the position he held at the time he received his recent promotion.

Thomas L. Kanan, whose promotion to assistant engineer of track on the Colorado & Southern and Ft. Worth & Denver City at Denver, Colo., was recently announced (RT&S, Jan., p. 70), was born August 18, 1907, at Cameron, Mo. He received his higher education at Missouri Wesleyan College and entered the service of the Chicago, Burlington & Quincy in May 1922 as an extra gang laborer. He was appointed extra gang timekeeper in June 1924, assistant extra gang foreman in March 1925, and extra gang foreman in June 1926. He served as section and extra gang foreman from 1926 until 1932 when he was promoted to track supervisor. Mr. Kanan was named assistant roadmaster in 1944, and in 1946 was promoted to roadmaster—the position he held prior to his recent promotion.

Thomas L. Kanan

R. H. Morrison, who was recently promoted to assistant chief engineer of the Bangor & Aroostook at Houlton, Me. (RT&S, January, p. 70), was born at Rumford, Me., on February 15, 1912, and received his B.S. degree in civil engineering from the University of Maine in 1936. From 1936 to 1938 he was employed as an engineer and inspector in the bridge division of the State Highway Commission at Augusta, Me., following

(*Continued on page* 170)

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which he held the position of superintendent and engineer for a private concern at Waterville, Me. Mr. Morrison began his career with the B&A on February 1, 1940, as superintendent of bridges and buildings at Houlton. On February 1,

R. H. Morrison

1945, he was advanced to principal assistant engineer, the position he held at the time he received his recent appointment.

R. K. DeLong, who has been appointed engineer of construction for the Atlantic region of the Canadian National at Moncton, N. B., (RE&M, November, p. 1110) was born at Shannon, N. B., and was graduated from Nova Scotia Technical College with a land surveyor's certificate. Prior to his entry into service with the CNR, he was employed on construction work of the former St. John & Quebec and with the department of highways, Province of New Brunswick. Mr. Delong joined the CNR in 1918 as a transitman at Moncton. From Moncton he went to Charlottetown, P.E.I., Malagash, N.S., St. John, N.B., New Glasgow, N.S., Truro, N.S., Halifax, N.S., Napadogan, N.B., and Sydney, Ont., where he was successively employed as acting bridge and building master, draftsman, resident engineer, assistant division engineer and roadmaster. In 1949 he was appointed division engineer on the Moncton division, the position he held at the time he received his recent promotion.

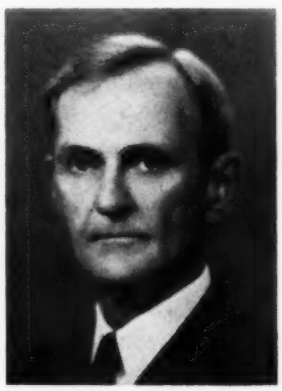
John W. Wallenius, engineer maintenance of way of the Central region of the Pennsylvania with headquarters at Pittsburgh, Pa., has been appointed assistant

John W. Wallenius

chief engineer of the Eastern region at New York. Mr. Wallenius was born at Springfield, Mass., and was graduated from Yale University in 1928. He joined the engineering corps of the Pennsylvania in 1929 at Pittsburgh, and served as assistant supervisor of track and supervisor of track in New York, Ohio, Indiana and Maryland prior to his advancement to assistant division engineer of the Philadelphia Terminal division in 1943. In 1944 he was promoted to division engineer of the Renovo division at Erie, Pa., and subsequently served in that capacity on the Long Island at Jamaica, N. Y., and on the Eastern division of the PRR at Pittsburgh. In 1951 Mr. Wallenius was appointed assistant superintendent of the Chicago division, and the following year was advanced to the position of engineer maintenance of way of the Central region.

M. B. Miller, who has been promoted to assistant division engineer on the Pennsylvania at Altoona, Pa. (RT&S, January, p. 70), was born at Joliet, Ill., on September 12, 1917, and received his B.S. in civil engineering from Iowa State College in 1940. He began his railroad career with the Pennsylvania on June 15, 1940, as an engineering apprentice at Terre Haute, Ind. On December 16 of that year he was advanced to assistant on the engineer corps and served in that capacity at Terre Haute, Toledo, Ohio and Fort Wayne, Ind. He was appointed assistant supervisor of track at Enola, Pa., on January 16, 1942, and the following April was transferred to Lewistown, Pa. Mr. Miller entered the U. S. Army on July 2, 1942, where he served on active duty in the field artillery. Returning to the Pennsylvania on January 5, 1946, he was appointed assistant supervisor of track at Wilmington, Del. He was promoted to supervisor of track at Harrington, Del., on September 16, 1946, and on June 1, 1948, was transferred in that capacity to the Philadelphia Terminal division at North Philadelphia, Pa., where he remained until he received his recent appointment as assistant division engineer.

A. A. Logue, who recently retired as assistant to the division engineer of the St. Louis division of the Illinois Central at Carbondale, Ill. (RT&S, Jan., p. 70), was born November 22, 1882, at Reboboth, Ala. Upon graduation in 1906 from the Alabama Polytechnic Institute he joined the IC as an engineering apprentice on the Louisiana divison. After serving there and on the New Orleans Terminal, he was promoted to draftsman in 1909 and transferred to the office of the chief engineer at Chicago. In 1910, Mr. Logue returned to New Orleans as masonry inspector on the Poydras freight terminal. He was promoted to instrumentman in 1911, and served in that capacity on the Vicksburg and Mississippi divisions and on the depot and track elevation project at Memphis, Tenn. He served as an assistant engineer on the Iowa and St. Louis divisions, and in 1923 returned to the chief engineer's office at Chicago



A. A. Logue

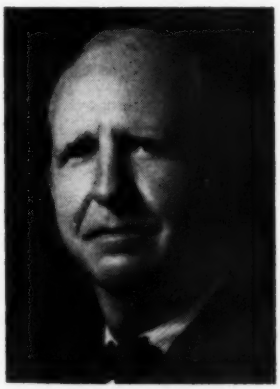
where he remained until 1931 when he was appointed assistant to the division engineer at Carbondale—the position he held at the time of his recent retirement.

H. P. Morgan, who has been promoted to division engineer on the Lake division of the Pennsylvania at Cleveland, Ohio (RT&S, January, p. 70), was born at

Uniontown, Pa., on January 10, 1914. Upon graduating from West Virginia University in June 1936, he entered the service of the Pennsylvania, serving as engineer apprentice and assistant on engineering corps on the Buffalo, Pittsburgh and Cleveland divisions and in the office of chief engineer maintenance of way of the Central region, until June 1940, when he was advanced to assistant supervisor of track at Baltimore, Md. In April 1941 Mr. Morgan was furloughed for military service, and on being released from the army as lieutenant-colonel in the Transportation Corps, returned to the railroad in December 1945 as supervisor of track on the Monongahela division at Shire Oaks, Pa., and subsequently served in that capacity at Crestline, Ohio, and Cresson, Pa. He was promoted to assistant division engineer, specal duty, in the office of the chief engineer at Philadelphia in 1949, and in 1951 was transferred to the Columbus division at Columbus, Ohio, where he was serving when he received his recent promotion.

Robert J. Crane, assistant chief engineer, Eastern lines, of the New York Central, has been appointed chief engineer of those lines, including the affiliated Boston & Albany, with headquarters as before at New York. Mr. Crane succeeds **George A. Noren,** who has retired after more than 40 years of service with the Central. **Clifford T. Gunsallus,** district engineer of the B&A at Boston, replaces Mr. Crane as assistant chief engineer at New York.

Mr. Crane was born at Brewster, N. Y., on February 21, 1890, and attended New York University and Bucknell University (C.E., 1914), taking Columbia University extension courses during 1919 and 1920. He began his career as assistant engineer, Board of Water Supply, New York, in 1913, becoming transitman for the Bronx



Robert J. Crane

Parkway Commission in 1915. Entering railroad service in 1916 as designer for the NYC at New York, Mr. Crane subsequently served as assistant engineer at New York, becoming special engineer in 1941. From 1942 to 1945, he served as lieutenant-colonel and colonel, U. S. Army, Military Railway Service, in Africa, Italy and the European Theatre of Operations. On December 1, 1945, Mr. Crane returned to the NYC as assistant chief engineer at New York.

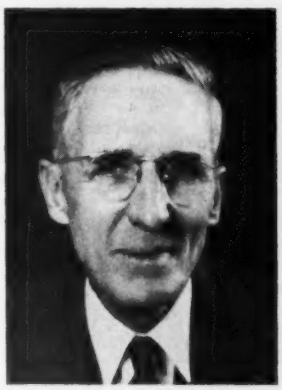
Mr. Noren was born at New Britain, Conn., on April 6, 1886, and attended the University of Pennsylvania (1910). He entered railroad service in June 1910 as rodman with the Pennsylvania and in October 1911 became assistant engineer for the Monterey Electric Railway, Light & Power Co., at Monterey, Mexico, later engaging in private practice in general engineering in Monterey. Mr. Noren joined the NYC in 1912 as assistant engineer on the Hudson River division, and subsequently served as assistant engineer on the Hudson River Connecting; resident engineer on station improvements at Poughkeepsie; assistant district engineer of the Central district; engineer of grade crossings at New York; designing engineer; engineering assistant to vice-president at New York; and engineering assistant to executive vice-president. He was appointed chief engineer at New York in 1945.

George A. Noren

H. R. Clarke, chief engineer of the Chicago, Burlington & Quincy and subsidiary lines, with headquarters at Chicago, has retired after 45 years of service with this company. **H. A. Aalberg,** assistant chief engineer, system, has been promoted to chief engineer, Burlington Lines, in charge of engineering and maintenance of way, with headquarters, as before, at Chicago. **E. J. Brown,** engineer of track, system, has been promoted to assistant chief engineer, system, to succeed Mr. Aalberg, and **F. H. McKenney,** district engineer maintenance of way of the Lines West, with headquarters at Omaha, Neb., has been promoted to engineer of track at Chicago to succeed Mr. Brown. **S. J. Owens, Jr.,** division engineer with headquarters at Casper, Wyo., has been promoted to district engineer maintenance of way at Omaha succeeding Mr. Kenney. **A. J. Strobel,** assistant engineer of construction on the Burlington's Centennial Cutoff on its route between Chicago and Kansas City, now practically completed, has been promoted to division engineer at Casper to succeed Mr. Owens.

Mr. Clarke, born in Ireland on November 15, 1882, received his higher education from Monmouth College and entered railroad service as a chainman and rodman on the Missouri Pacific in 1906. He joined the Burlington the following year as a rodman and instrumentman, and in 1908 was appointed extra gang time keeper. He later served as extra gang foreman and in 1911 was appointed resident engineer on construction. Mr. Clarke served as roadmaster from 1911 until 1919, general roadmaster from 1919 to 1921, and district engineer maintenance of way between 1921 and 1923. From 1923 until 1925 he was engineer maintenance of way, Lines West, and in the latter year was appointed general inspector permanent way. He was named engineer maintenance of way of the CB&Q in 1932, and in 1934 was appointed engineer maintenance of way of the Burlington Lines. He was promoted to chief engineer maintenance of way of the system in 1942, and the following year was named chief engineer, the position he held at the time of his retirement. Mr. Clarke is an honorary member and past president of the American Railway Engineering Association, of America, and past president of the Maintenance of Way Club of Chicago.

H. R. Clarke



H. A. Aalberg

Mr. Aalberg, born September 6, 1887, at Minneapolis, Minn., received his higher education at Highland Park College and

(*Continued on page* 172)

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Railway Personnel (Cont'd)

entered the service of the CB&Q on May 16, 1910, as a field draftsman, topographer and levelman on location in Wyoming, Colorado and Montana. He was appointed draftsman in the office of the assistant chief engineer at Lincoln, Neb., in September 1911, and the following year was promoted to instrumentman, maintenance, on the McCook division at Denver, Colo. From June 1916 until June 1922, Mr. Aalberg served as division engineer of the Lincoln division at Lincoln, and on the latter date was named chief of a locating party in Wyoming. In November of the same year he returned to his former position as division engineer at Lincoln, and in February 1923 was transferred to the McCook division at Denver. On February 1, 1937 he was promoted to assistant chief engineer, Lines West, at Lincoln, and in April 1946 was named assistant chief engineer, system, at Chicago—the position he held at the time of his recent promotion to chief engineer.

Mr. Brown was Born December 1, 1900, at St. Joseph, Mo., and received his higher education at Christian Brothers

E. J. Brown

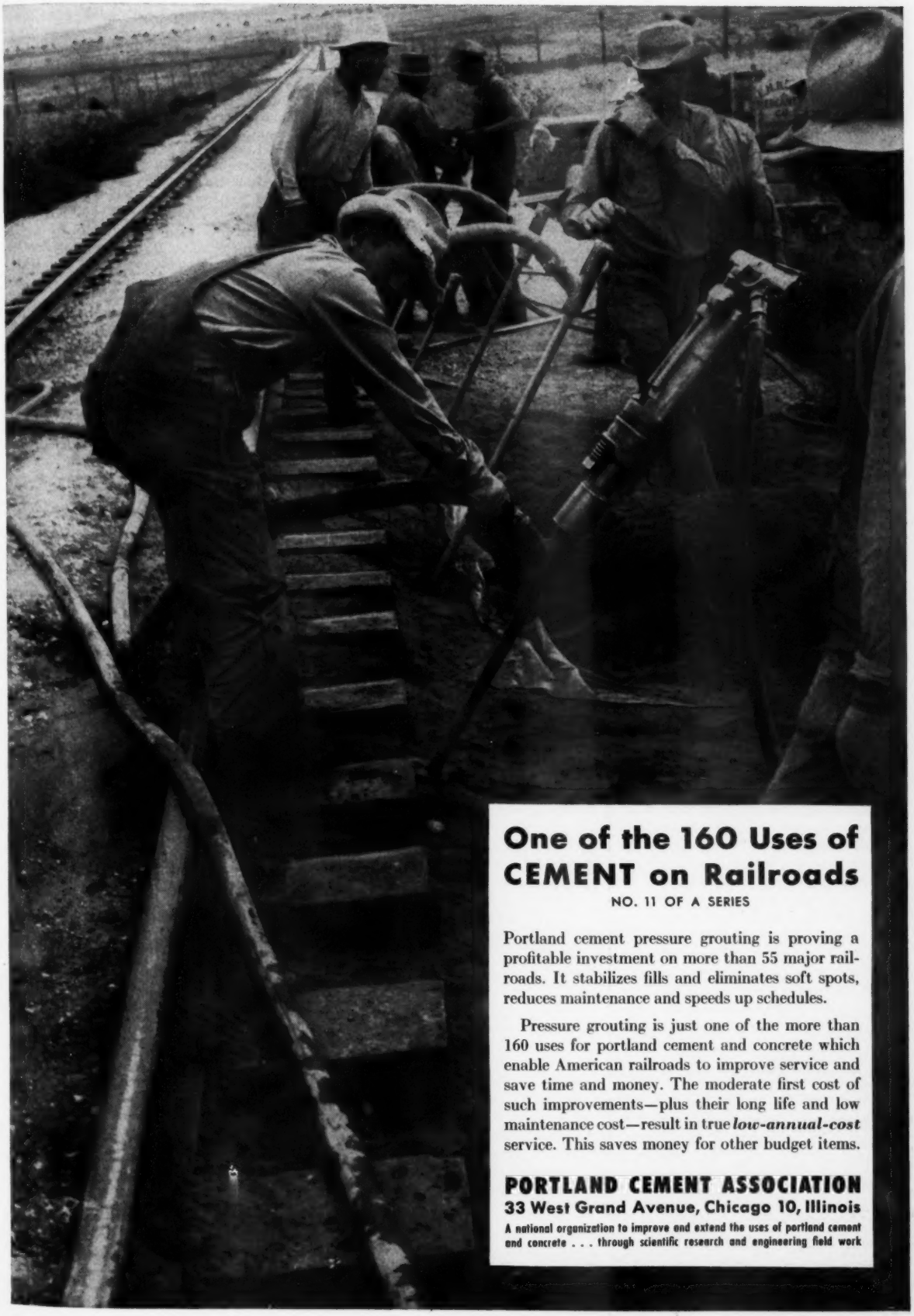
College and St. Patrick's Academy. He entered railroad service on May 26, 1919, as a yard clerk on the CB&Q, and subsequently served as chief clerk to the general yardmaster, assistant extra gang foreman, section foreman, extra gang foreman, assistant roadmaster, and roadmaster until 1939 when he was promoted to district engineer, maintenance of way. In 1942 Mr. Brown was named assistant division superintendent, and in 1943 was appointed engineer of track, which position he held at the time of his recent promotion to assistant chief engineer.

Track

D. Lynch has been appointed supervisor of track on the Monongahela Connecting at Pittsburgh, Pa.

A. Gagne has been appointed assistant roadmaster on the Montreal terminals of the Canadian Pacific at Montreal, Que.,

(*Continued on page* 174)



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Railway Personnel (Cont'd)

to succeed **K. Gibson,** who has been promoted.

Eugene Staats has been appointed acting roadmaster on the Santa Fe with headquarters at Kansas City, Mo. Mr. Staats will cover the main line between Kansas City and Purcell, Okla., working with Tournapull equipment.

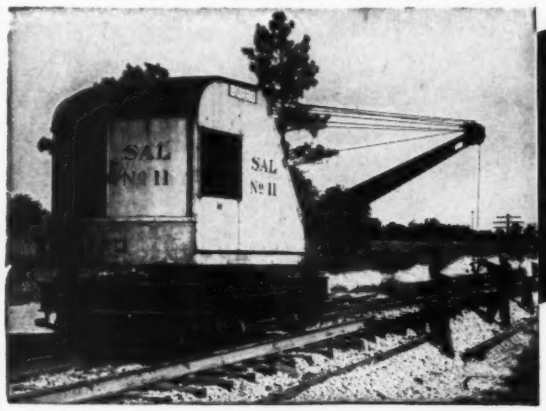
W. C. Johnson, roadmaster on the Hamlet-Columbia line of the Seaboard Air line, has been transferred to the Wilmington line with headquarters as before at Hamlet, N. C., to succeed **R. L. Griffin,** who has retired after 42 years of service. **J. F. Burns,** assistant roadmaster at Richmond, Va., has been promoted to roadmaster to succeed Mr. Johnson, and **J. N. Gatch,** assistant roadmaster on the system rail gang, has succeeded Mr. Burns at Richmond.

Thomas A. Prata, whose promotion to roadmaster on the Milwaukee Road at Missoula, Mont., was recently announced (RT&S, Jan., p. 72), was born in Italy on January 5, 1905. He entered the service of the Milwaukee as a laborer at Bonner, Mont., on May 9, 1920, and three years later was appointed assistant extra gang foreman at that location. He was named section foreman at Saltese, Mont., in 1924, and on May 2, 1938, was promoted to rock gang foreman. Mr. Prata was appointed general extra gang foreman on July 5, 1943, and on July 1, 1947, was named assistant roadmaster—the position he held prior to his recent promotion.

James E. Dean, section foreman on the Southern, has been advanced to assistant supervisor of track at Fargo, Ga.; **Sam F. Simpson,** section foreman, has been advanced to assistant supervisor of track at Lake City, Fla.; **Clarence B. Hedrick,** Junior engineer at Birmingham, Ala., has been advanced to assistant supervisor of track, office of chief engineer, maintenance of way and structures, at Cincinnati, Ohio; **Luther V. Armstrong,** assistant supervisor of track at Charleston, S. C., has been transferred to Branchville, S. C.; **Alvin L. Young,** extra gang foreman, has been advanced to assistant supervisor of track at Lexington, Ky.; and **Joseph T. Stevens,** has been made assistant supervisor of track at Marion Junction, Ala.

R. L. Dankbar, whose promotion to supervisor of track on the Illinois Central at Freeport, Il., was recently announced (RT&S, Jan., p. 74), was born August 28, 1922, at Haverhill, Iowa. Upon graduation from Iowa State College in June 1948, he entered the service of the IC as an engineering aid on soil inspection and line relocation work at Grenada, Miss. On May 1, 1950, he was transferred to the divson engineer's office at Jackson, Tenn., where he remained until January 16, 1951, when he was named assistant

(*Continued on page* 180)



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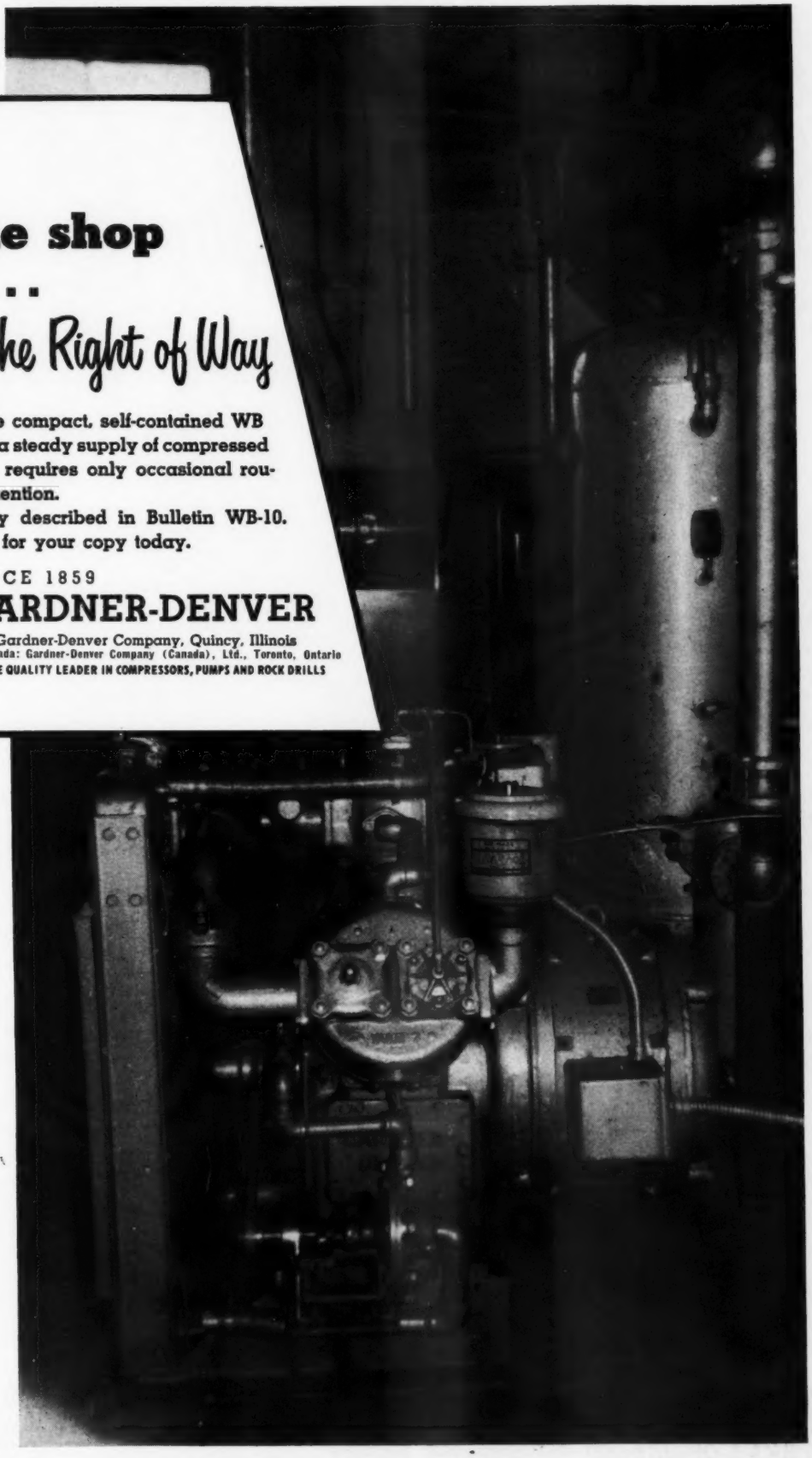

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ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

The following is a complete list of products mentioned in the advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and postage paid cards in requesting it. In each case give product name and page number. The information will come to you directly from the manufacturer, without obligation on your part.

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READER
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Saves $1300 per mile
...with help of TIMKEN® bearings

VIRTUALLY a mechanized pick and shovel gang with built-in supervision, this Pullman-Standard Power Track Cribber does the work of 30 men. It breaks up fouled roadbed ballast, removes it from the cribs between ties and automatically slopes the cribs' profiles for proper drainage —all this at the rate of approximately two cribs per minute. One railroad reports that their use of the Power Cribber saves $1300 per mile . . . another that they saved $47,000 during the first year's operation.

To take the terrific thrust loads set up by the clutches which spot this 38,000-pound machine over the crib, the shafts in the transmission are mounted on Timken® tapered roller bearings. Pullman-Standard switched to Timken bearings five years ago because the bearings formerly used couldn't prevent the thrust loads from tearing up the shafts. Pullman-Standard hasn't had a bit of bearing trouble since.

Timken bearings are tapered in construction to carry radial, thrust and combination loads. Extra load-carrying capacity is provided by line contact between rollers and races of Timken bearings. Shafts are held in rigid, positive alignment assuring smooth and accurate gear mesh. There's no shaft wear, less wear on other moving parts.

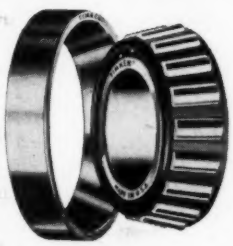
Timken bearings are also used on the cribbers' axles.

Because of true rolling motion and incredibly smooth surface finish, Timken bearings practically eliminate friction, permit higher cribber speeds to and from the job. Since shafts and housings are held concentric, closures are more effective. Lubricant is kept in—dirt and dust kept out.

No other bearing has so much to offer as a Timken bearing. Specify them for your machinery. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

How **PULLMAN-STANDARD CAR MANUFACTURING COMPANY** mounts the axles of its Power Track Cribber on Timken bearings. Timken bearings hold shafts in rigid, positive alignment, reduce wear.



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TAPERED ROLLER BEARINGS

FINISHED TO CLOSER TOLERANCES

Finishing to incredible smoothness accounts for much of the precise, smooth rolling performance of Timken bearings. This honing operation is typical of the amazingly accurate manufacturing methods at the Timken Company.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◎ AND THRUST →◎← LOADS OR ANY COMBINATION →✳←

Railway Personnel (Cont'd)

supervisor of track at Jackson, Tenn. He was later transferred to Jackson, Miss., where he was located prior to his recent promotion.

B. B. Mercer, assistant supervisor of track on the Electric division of the New York Central at New York, has been promoted to supervisor of track on the Pennsylvania divison at Clearfield, Pa., to succeed **William Baerthlein,** who, as announced elsewhere in these columns, has been advanced to assistant division engineer at Buffalo, N. Y. Mr. Mercer has been succeeded as assistant supervisor of track by **C. J. Murphy,** welder. **G. W. Bennett,** assistant supervisor of track at Lyons, N. Y., has been promoted to supervisor of track on the St. Lawrence division at Watertown, N. Y., to replace **Wolters Ledyard,** who, as announced elsewhere in these columns, has been appointed assistant division engneer at Jersey Shore, Pa.

Thomas J. Vansandt, whose promotion to general track supervisor on the Southern Pacific at San Francisco was recently announced (RT&S, Jan., p. 74), was born November 17, 1898, at Seligman, Mo. He entered the service of the SP on April 27, 1925, as a laborer at Niland, Cal. On July 1, 1925, he was promoted to section foreman at Ogildy, Cal., and until June 1, 1941, served in that capacity at Calexico, Cal., Indio, Paso Robeles and Salinas. On the latter date he was named general foreman on the Coast division, and on February 10, 1942, was loaned to the Bureau of Reclamation to supervise track construction on the Delta line change at Redding, Cal. On July 10, 1942, Mr. Vansandt was promoted to roadmaster at Glendale, Ore., and on April 23, 1943, was transferred in that capacity to Truckee, Cal. He was named roadmaster at Roseville, Cal., on May 1, 1944, the position he held at the time of his recent promotion on December 8, 1952.

Bridge and Building

W. R. Graham, assistant supervisor of bridges and buildings on the Chesapeake & Ohio, has been promoted to supervisor of bridges and buildings to succeed **C. H. Walker,** who has retired after 40 years of service.

Shirley White, supervisor of bridges and buildings on the Southern Pacific at Tucson, Ariz., has been promoted to general bridge and building supervisor, with headquarters at San Francisco, succeeding **F. M. Misch,** deceased.

Special

Roy B. Chapman, general supervisor of work equipment and welding on the Southern Pacific, has been appointed general superintendent maintenance of way shops and equipment, with headquarters, as before, at San Francisco.

Bernard Geier, supervisor of work equipment and welding of the Delaware, Lackawanna & Western, has been appointed to the newly created position of engineer of equipment and design, with headquarters as before at Scranton, Pa. The position of supervisor of work equipment and welding has been abolished.

H. H. Baber, who has been appointed general supervisor of the timber preserving plant and roadway material yard of the Norfolk & Western at Radford, Va., was first employed by the N&W in May 1904 and worked as a clerk at the storehouse in Roanoke, Va., until 1909, when he resigned. Returning to the railroad as a clerk in the engineering department in December 1926, Mr. Baber became statistical clerk in June 1928 and was promoted to material yard supervisor in July 1932. He was named supervisor of the maintenance of way material yard at Roanoke in March 1940, the position he held at the time he received his recent promotion. (Mr. Baber's name was incorrectly reported at H. H. Baker in the January Issue.)

Obituary

Cecil R. Woodley, roadmaster on the Chicago & Illinois Midland at Spring-

(*Continued on page* 182)

The "PELICAN" PUMP

THE WONDER PUMP OF THE
Lightweight Field

AND THE LOWEST PRICED TWO-INCH PUMP OF ITS CAPACITY ON THE MARKET!

The "Pelican" self-priming centrifugal pump challenges any pump its size and type to equal it in performance.

Quickest priming, Fastest pumping, Most dependable

Suction Lift - up to 25 feet, sea level.

Automatic Self-priming - no ports, no valves.

Portability - weighs only 70 pounds, provided with carrying handle for easy portability.

Non-clogging - any muck or solids that will pass the intake strainer will pass through the pump.

Simplicity - the impeller, the only moving part, is mounted directly on the engine shaft and operates at engine speed.

The "Pelican" is a reliable, trouble-free, general utility pump small enough for easy handling and large enough for a wide range of applications in municipal utility field.

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The Midget, 1½" - wgt. 62 lbs., 5500 g.p.h. Primes in 75 sec. at 25 ft. suction lift.

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The Eagle, 3" - wgt. 117 lbs., 18,000 g.p.h. Primes in 79 sec. at 25 ft. suction lift.

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out with the OLD in with the NEW!

Last year, railroads put in over 150 miles of continuous rail constructed with OXWELD'S RIBBONRAIL Service. Indications are that a number of railroads will select RIBBONRAIL Service for modern track construction in 1953.

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Railway Personnel (Cont'd)

field, Ill., died on December 28, 1952, at Springfield.

Mr. Woodley was born July 23, 1899, at Spring Lake, Ill., and entered railway service in 1915 as a section laborer with the Chicago, Peoria & St. Louis. That road was subsequently taken over by the C&IM in 1926, and on April 2, 1929, Mr. Woodley was promoted to section foreman at Petersburg, Ill. He was named general track foreman at Kincaid, Ill., in August 1941, and district supervisor at that location in March 1942. In August 1944 he was promoted to roadmaster at Springfield.

Association News

American Railway Engineering Association

Members are advised that reservations for hotel rooms in the Palmer House, Chicago, are now being taken and that preference will be given to those whose applications are in early. The secretary's office is also taking reservations for full tables for the annual luncheon to be held in conjunction with the convention, March 17-19.

For the convenience of those who wish to make advance plans for their stay in Chicago, the tentative convention program is as follows:

Tuesday, March 17

Morning Session—9:45 to 12:15

(Grand Ballroom)

Address of President C. J. Geyer
Reports of the Secretary and Treasurer
Greetings from the Signal Section, AAR
Greetings from the Electrical Section, AAR
Address by J. H. Aydelott, vice-president, AAR (tentative)
Address by G. M. Magee, research engineer, Engineering Division, AAR
Reports of Committees
14—Yards and Terminals
16—Economics of Railway Location and Operation

Afternoon Session—2:00 to 4:45

(Grand Ballroom)

Reports of Committees
25—Waterways and Harbors
9—Highways
24—Cooperative Relations with Universities
20—Contract Forms
11—Records and Accounts
13—Water, Oil and Sanitation Services

Wednesday, March 18

Morning Session—9:00 to 12:00

(Red Lacquer Room)

Reports of Committees
7—Wood Bridges and Trestles
28—Clearances
29—Waterproofing
30—Inpact and Bridge Stresses
8—Masonry
15—Iron and Steel Structures

Association Luncheon, 12:00 Noon

(Grand Ballroom)

Announcement of results of election of officers
Address by guest speaker

Afternoon Session—2:30 to 5:15

(Red Lacquer Room)

Reports of Committees
17—Wood Preservation
6—Buildings
27—Maintenance of Way Work Equipment
22—Economics of Railway Labor
1—Roadway and Ballast

Thursday, March 19

Morning Session—9:00 to 12:30

(Grand Ballroom)

Reports of Committees
3—Ties
5—Track
Special Committee on Continuous Welded Rail
4—Rail
Closing Business
Installation of Officers

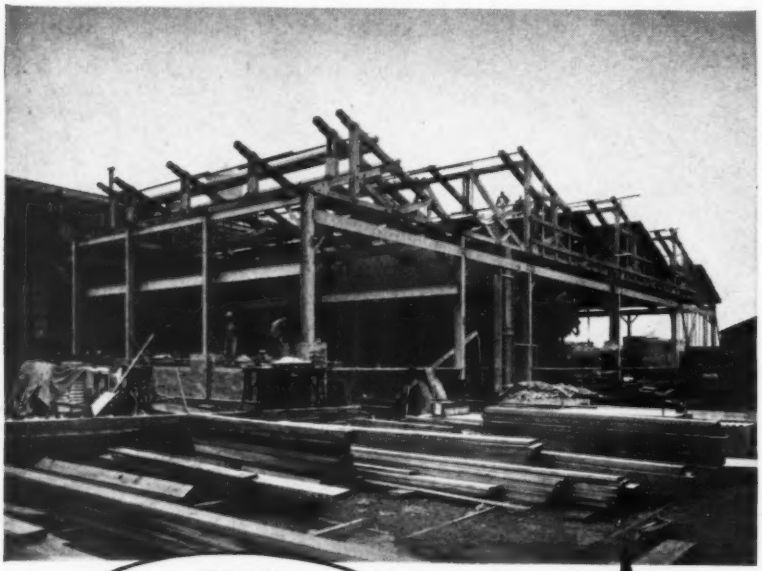
Ten new committee chairmen and vice-chairman have been appointed to take over the direction of committee work at the close of the annual convention. These are as follows:

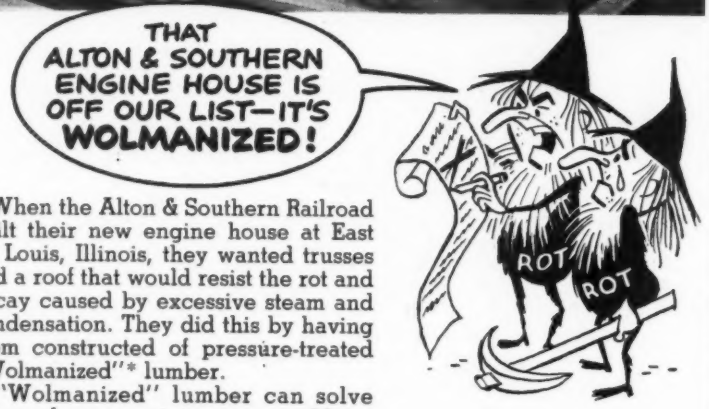
Committee 1—Roadway and Ballast: B. H. Crosland (chairman), assistant chief engineer, St. Louis-San Francisco, Springfield, Mo.; J. A. Noble (vice-chairman), chief engineer, Western Lines, Atchison, Topeka & Santa Fe, Amarillo, Tex. Mr. Crosland will succeed present chairman G. W. Miller, engineer maintenance of way, Eastern region, Canadian Pacific, Toronto, Ont.

Committee 5—Track: L. L. Adams (chairman), chief engineer, Louisville & Nashville, Louisville, Ky.; W. E. Cornell (vice-chairman), engineer of track, New York, Chicago, & St. Louis, Cleveland, Ohio. Mr. Adams will succeed present chairman F. J. Bishop, chief engineer, Akron, Canton & Youngstown, Akron, Ohio.

Committee 9—Highways: W. C. Pinschmidt (chairman), engineering assistant to vice-president, Chesapeake & Ohio, Huntington, W. Va.;

(*Continued on page* 184)





• When the Alton & Southern Railroad built their new engine house at East St. Louis, Illinois, they wanted trusses and a roof that would resist the rot and decay caused by excessive steam and condensation. They did this by having them constructed of pressure-treated "Wolmanized"* lumber.

"Wolmanized" lumber can solve many of your maintenance problems caused by moisture and heat. It is clean, odorless, paintable, non-leaching. There are Wolman preservative plants in all parts of the country. For further information, write:

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San Francisco • Baltimore • New York • Jacksonville, Fla.

Ingersoll-Rand's MT4 and MT8 Tamping Guns with the 3R36 Spot-Air Compressor

EXAMINE THESE TAMPING GUN FEATURES	
PROPER POWER	The MT4 has just the power needed for the majority of your tamping jobs, while the MT8 hits with twice the power of the MT4 for tamping where ballast conditions permit.
ROCK BOTTOM AIR CONSUMPTION	Four MT4's or two MT8's can easily be operated from the compact, highly portable 3R36 Spot-Air Compressor.
STANDARD STEELS	Both the MT4 and MT8 take the same steels—no duplication is necessary. A complete line of steels is available, engineered to fit your jobs.
CHROME PLATED PISTONS	Chrome plated pistons, polished to a mirror finish, reduce wear on both pistons and barrels, reduce effects of insufficient lubrication, and increase resistance to sand, grit or scale particles.
COMFORTABLE TO OPERATE	Air Powered Tamping Guns operate cool to the touch—no fumes or heat to lower the comfort and efficiency of the operators.
RIGHT OR LEFT HAND OPERATION	MT4 and MT8 Tamping Guns can be changed from right to left hand operation, without removing the handle or changing the position of the steel.
HANDY THROTTLE	Throttle is located for ease of operation and so that there is little danger of breakage if the Tamping Gun is dropped.

The Ingersoll-Rand 3R36 Spot-Air Compressor is a self-contained gasoline-powered compressor. It weighs only 265 pounds, and can be easily carried by two men. It will operate four MT4 Tamping Guns or two MT8 Tamping Guns.

Originator of Mechanical Tamping

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

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NORTHWESTERN
RAIL AND FROG
GRINDER

For Heavy Duty Grinding At Lower Cost

Positive control maintains accurate relationship between grinding wheel and rail. The results are SMOOTH, ACCURATELY ground welds that stand up longer under traffic and reduce track maintenance costs.

The Northwestern Heavy Duty 540A Rail and Frog Grinder illustrated is one of several models. For complete information ask your Northwestern Representative or write direct.

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Association News (Cont'd)

C. I. Hartsell (vice-chairman), division engineer, Chesapeake & Ohio, P. M. district, Saginaw, Mich. Messrs. Pinschmidt and Hartsell will succeed present chairman W. H. Huffman, assistant to chief engineer, Chicago & North Western, Chicago, and present vice-chairman Bernard Blum, chief engineer, Northern Pacific, St. Paul, Minn., respectively.

Committee 11—Records and Accounts: H. N. Halper (chairman), valuation engineer, Erie, Cleveland, Ohio; L. W. Howard (vice-chairman), valuation engineer, Illinois Central, Chicago. Mr. Halper will succeed present chairman Louis Wolf, assistant engineeer, Missouri Pacific, St. Louis, Mo.

Committee 14—Yards and Terminals: J. N. Todd (chairman), superintendent of scales and work equipment, Southern, Washington, D. C.; F. A. Hess (vice-chairman), assistant chief engineer, New York Central, Chicago. Mr. Todd will succeed present chairman J. E. Hoving, assistant to chief engineer, Northern Pacific, Pasco, Wash.

Committee 15—Iron and Steel Structures: J. F. Marsh (chairman), engineer of bridges, Chicago, Rock Island & Pacific, Chicago; A. R. Harris (vice-chairman), engineer of bridges, Chicago & North Western, Chicago. Mr. Marsh will succeed present chairman J. L. Beckel, assistant engineer of structures, New York Central, New York.

Committee 20—Contract Forms: G. W. Patterson (chairman), assistant chief engineer, Pennsylvania, Pittsburgh, Pa.; W. D. Kirkpatrick (vice-chairman), assistant engineer, Missouri Pacific, St. Lous, Mo. Messrs. Patterson and Kirkpatrick were appointed chairman and vice-chairman, respectively, this past summer by the Board Committee on Personnel, as the result of the resignation then of the chairmanship by L. A. Olson, assistant engineer bridges, Chesapeake & Ohio, P. M. district, Detroit, Mich.

Committee 27—Maintenance of Way Work Equipment: C. E. Morgan (chairman), superintendent of work equipment and welding, Chicago, Milwaukee, St. Paul & Pacific, Chicago; N. W. Hutchison (vice-chairman), engineer of work equipment, Chesapeake & Ohio, Barboursville, W. Va. Mr. Morgan will succeed present chairman R. K. Johnson, superintendent work equipment and reclamation, Chesapeake & Ohio, Barboursville, W. Va.

Committee 28—Clearances: A. M. Weston (chairman), senior assistant engineer, Baltimore & Ohio, Baltimore, Md.; E. R. Word (vice-chairman), assistant engineer, Illinois Central, Chicago. Mr. Weston will succeed present chairman A. R. Harris, engineer of bridges, Chicago & North Western, Chicago.

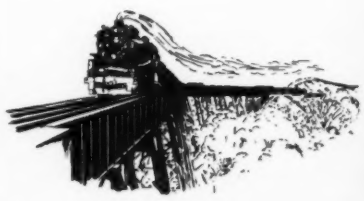
Committee 30—Impact and Bridge Stresses: E. S. Birkenwald (chairman), engineer of bridges, Southern, Cincinnati, Ohio; M. J. Plumb (vice-chairman), designer, New York Central, Chicago. Mr. Birkenwald will succeed present chairman J. P. Walton, engineer of bridges and buildings Pennsylvania, Chicago.

Mississippi Valley Maintenance of Way Club

A total of 230 members and guests attended the meeting that was held at the De Soto hotel, St. Louis, on January 12. The principal speaker at this meeting was Lt. Joseph Gallagher of the St. Louis Police Department. This new organization, which held its first regular meeting on December 8, closed its roster of charter members on December 31 with a total of 458 names on the membership list.

The next meeting was scheduled to be

(*Continued on page* 187)



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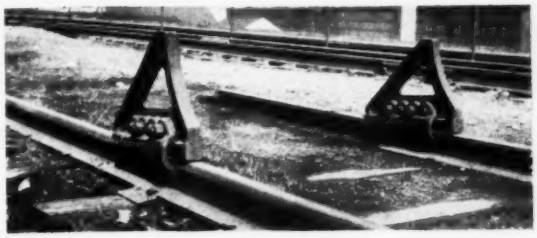

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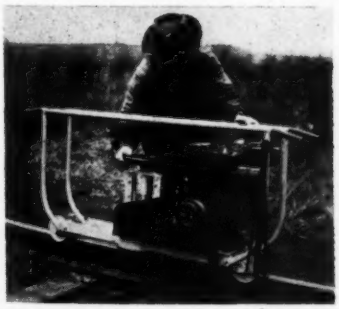

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For more detailed information about this or any other form of cancer, call our nearest office or simply address your letter to "Cancer" in care of your local Post Office.

American Cancer Society

Association News (Cont'd)

held on February 9 with E. L. Anderson, chief engineer, St. Louis-San Francisco, as the principal speaker. In addition the program was to include the showing of a motion picture depicting earthquake damage inflicted on the properties of the Southern Pacific in California last July.

Bridge and Building Association

A meeting of the Executive committee has been called by President F. R. Spofford to be held on Tuesday, March 17. The meeting will convene at 2 p.m. on the seventh floor of the Chicago Engineers' Club. The date of the meeting coincides with the first day of the annual convention of the American Railway Engineering Association.

(*Continued on page* 190)

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5

American Railway Engineering Association—Annual Meeting, March 17-19, 1953, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—Annual meeting, April 28, 1953, Cleveland Hotel, Cleveland, Ohio. W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting March 2. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

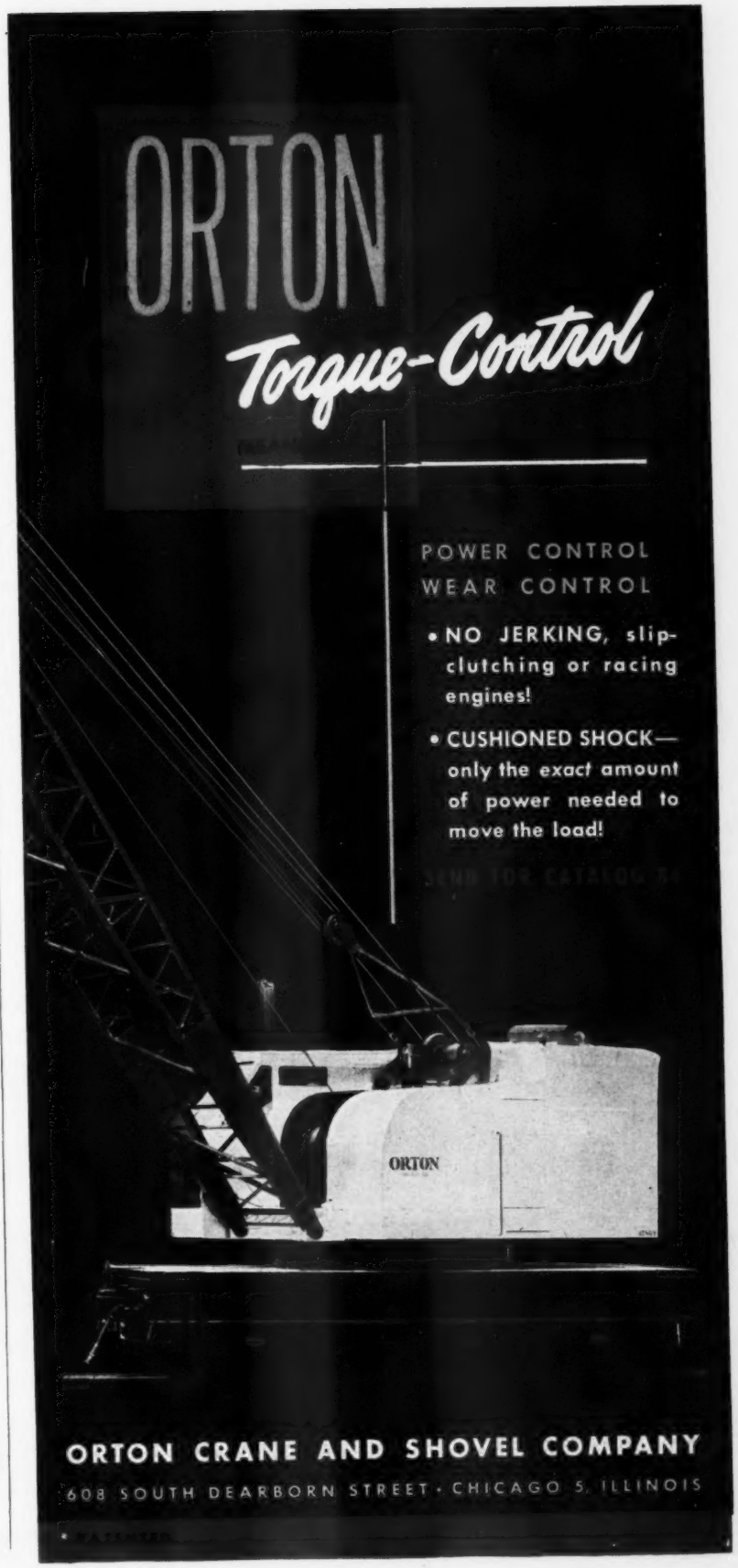
Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive Street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, October 14-16, 1953, Biltmore Hotel, Atlanta, Ga. Roy M. Edmonds, Secretary-treasurer, 1221 Locust Street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.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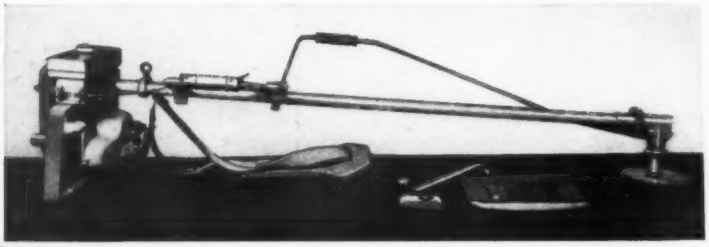

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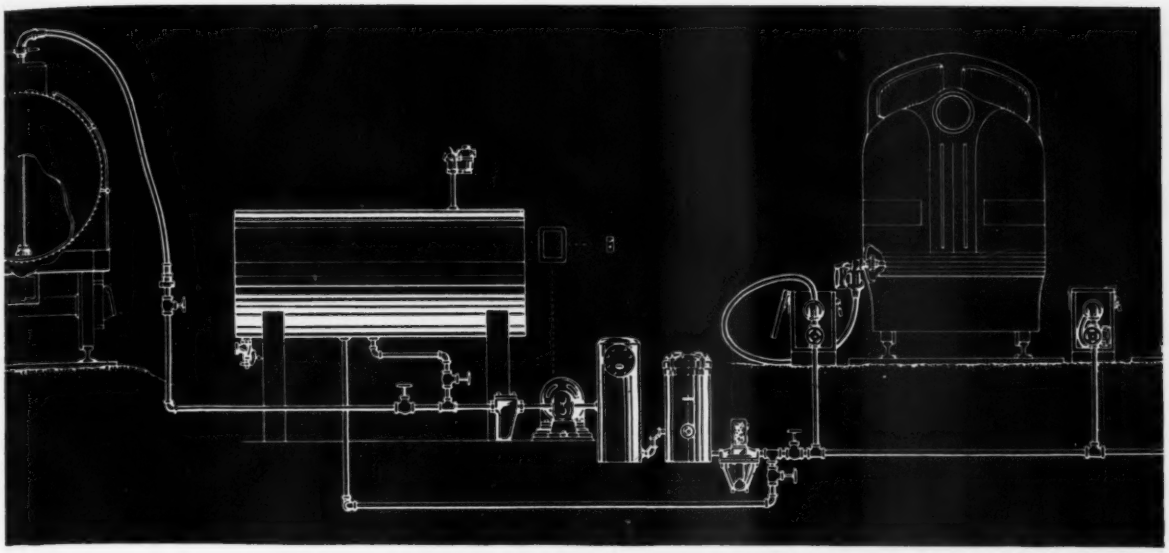

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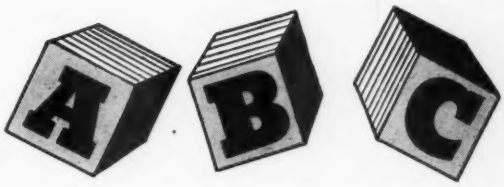
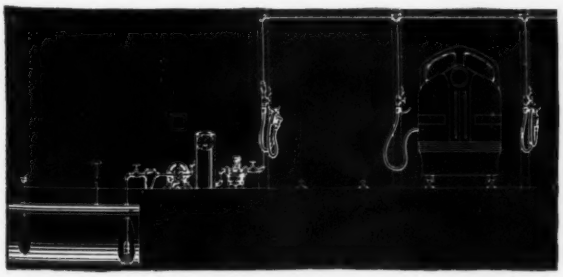
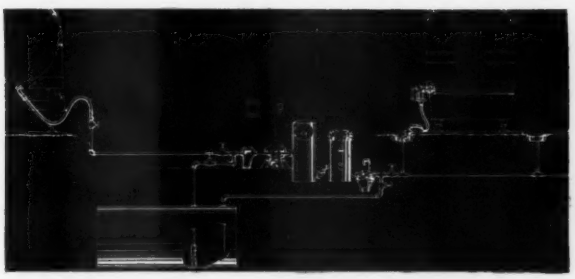


As the pioneer and foremost builder of equipment for railroad liquids, Bowser can A furnish complete engineering service and can B supply all the necessary equipment for proper installations of complete liquid handling systems . . . and C as both engineers and manufacturers, Bowser will accept full responsibility in assuring you of complete satisfaction.

Consult with the Bowser man in your territory on any railroad liquid handling problems. There's no obligation.



Metered lubricating oil



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Association News (Cont'd)

Maintenance of Way Club of Chicago

The January meeting of the club was held on the 26th at Eitel's restaurant in the Field Building, Chicago. The principal speaker was R. H. Beeder, assistant to chief engineer, Santa Fe System, who discussed the steps that are being taken on that road to obtain longer service life from crossties. His remarks were illustrated by slides.

The February meeting of the club was originally scheduled to be held on the 23rd, but because the Washington's Birthday holiday will fall on that date, the meeting has been set for March 2. Because of this change the March meeting, originally scheduled to be held on the 23rd, will be held on March 30. At the time of going to press the program for the March 2 meeting had not been announced.

Roadmasters' Association

President R. H. Gilkey has called a meeting of the Executive committee to be held at the Engineers' Club, Chicago, March 16. This will be one day in advance of the opening of the annual convention of the American Railway Engineering Association.

Metropolitan Maintenance of Way Club

Short talks by several speakers on the subject of "The Effect of Diesel Locomotives on Maintenance of Way Work," to be followed by an open forum discussion, will be the main feature of the next meeting of the club. This meeting, the date for which has been changed from February 26, as previously announced, to Thursday, February 19, will be held in the Skyline room of the Hotel Shelburne, New York, and will be preceded by dinner at 6:30 p.m.

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BEALL Hi-Duty SPRING WASHERS

are made especially to stand the strain of the heavy-duty rail service required by today's high-speed freight and passenger trains.

BEALL washers are strong and tough, yet provide the necessary "springing action" required at rail joints, frogs and crossings. Made especially for railroad service according to the exact dimensions specified by the A.S.A. and A.S.M.E.

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Supply Trade News

General

The **Colorado Fuel & Iron Corp.** has completed the acquisition of the plants, inventories and business of **John A. Roebling's Sons Company**, Trenton, N. J. The Roebling properties will be operated by John A. Roebling's Sons Corporation, a newly-formed and wholly-owned subsidiary of Colorado Fuel & Iron.

Personal

S. M. Clancey, general district sales manager for the **P. & M. Co.**, Chicago, with headquarters at Cleveland, Ohio, has retired after 36 years of service.

Ralph E. Spears, structural engineer for the **Portland Cement Association**, has been appointed district engineer at Salt Lake City, succeeding **E. B. Wilson**, who has resigned.

Dan Call, formerly associated with the Richmond, Fredericksburg & Potomac, has been appointed railway sales manager for the **Philip Carey Manufacturing Company**, Cincinnati, Ohio.

Joseph V. Smith has been elected chairman of the board and chairman of the executive committee and **James H. Knowles** has been elected president of **Hubbard & Co.**, Pittsburgh, Pa.

Thomas S. Walsh has been appointed factory representative of the **Rust-Oleum Corporation**, Evanston, Ill. Mr. Walsh, who will make his headquarters at Hills-

dale, N. J., will cover metropolitan New York and the Northern New Jersey trade area.

George R. McMullen has been named manager of the new Kansas City sales division of the **Gustin-Bacon Manufacturing Company,** Kansas City, Mo. **W. M. Doughman,** sales engineer, and **Grant I. Wyrick,** service engineer, have been assigned to the new division which will cover four states and concentrate on sales of the company's glass fiber insulation and industrial products.

Robert F. Carr, Jr., has been elected vice-president of the **Dearborn Chemical Company,** Chicago. Mr. Carr began his service with Dearborn in 1934 upon graduation from the University of Illinois. After serving in the U. S. Coast Guard from 1940 until 1946, he rejoined Dearborn in a managerial position in the firm's Honolulu office, which position he held prior to his appointment as to vice-president.

Leo Flinn, sales and service representative for No-Ox-Id, a produce of the **Dearborn Chemical Company,** Chicago, has been appointed to the newly created position of supervisor of No-Ox-Id sales and service, with headquarters as before at Chicago. Mr. Flinn is a native of Tennessee, Ill., and was born on October 29, 1912. He entered railway service in June 1, 1928, as a sectionman on the Chicago, Burlington & Quincy, Subsequently he was advanced through the positions of assistant track foreman, foreman, extra gang foreman, track supervisor, and assistant roadmaster. On July 26, 1943, he was promoted to roadmaster with headquarters at Chicago. On May 31, 1947, he left the service of the Burlington to join the Rails Company as a sales and service representative with headquarters at Chicago. On September 1, 1949, he entered the service of the Dearborn Chemical Company as sales and service representative for No-Ox-Id. His promotion to supervisor of sales and service became effective on January 1.

Logan T. Johnston, general manager of sales for the **Armco Steel Corporation,** has been named vice-president in charge of sales, succeeding **John A. Ingwersen,** deceased. **Wallace B. Quail,** sales manager of the Central area, succeeds Mr. Johnston as general sales manager.

Mr. Johnston, a graduate of the Carnegie Institute of Technology, joined the Columbia Steel Company at Butler, Pa., in 1925 as a salesman of railroad car wheels. A few years later this company was acquired by Armco. Mr. Johnston later became president of the Armco Railroad Sales Company. In 1945 that company's activities were integrated with Armco's general sales division, and Mr. Johnston was appointed assistant to the general sales manager. Two years later he was named manager of sales, the position he held prior to his election as vice-president.

Mr. Quail, a veteran of 33 years service with Armco, graduated from Cornell

(*Continued on page* 192)

"BORASCU* SOLVES THE WEED PROBLEM ABOUT TIMBER BRIDGES AND TRESTLES"

BORASCU* *treatment proved more effective—and lasting—than shovel cutting or hand scalping . . . resulted in savings of as much as $1.66 per lineal foot of trestle per year for this class of work* . . . so reports one major road; other roads tell of similar benefits from their use of BORASCU*. To reap such important savings, have *your* section hands apply safe, noncorrosive, low-priced BORASCU* about your bridges, trestles, tie piles and buildings now . . . it's the easy, thrifty way to destroy fire-hazardous weeds and grasses!

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Ask Tony or Joe or any of the boys who worked with either of these Duff-Norton aluminum track jacks, and you'll get the same story. They like them because they're 25% and 33⅓% lighter than jacks with malleable iron housings. Being lighter in weight they are easier to carry and spot. With less energy expended in handling unnecessary dead weight, the gang is able to do more work.

Write the world's oldest and largest manufacturers of lifting jacks for TRACK JACK Bulletin AD18-F, The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant —Toronto 6, Ontario.

1. No. 517BA Single Acting Surfacing Jack can raise 15 tons 5 inches, weighs only 31 lbs.
2. No. 117A Single Acting Track Jack can raise 15 tons 13 inches, weighs only 46 lbs.

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Supply Trade News (Cont'd)

University in 1919. Upon graduation he joined the Standard Steel Car Company and in 1920 he became a salesman in that firm's New York office. When Armco acquired the wheel business of the Standard Steel Car Company in 1927, Mr. Quail was made New York district sales manager of railroad products. He was promoted to New York district manager for Armco's general sales division in 1945, and two years later was transferred to Middletown, Ohio, as manager of central area sales. Mr. Quail served as director of the Iron and Steel Division of the National Production Authority from 1950 to 1952.

W. L. Davies has been appointed Eastern district representative of the **Athey Products Corporation,** Chicago. Mr. Davies, who will work in the territory including Washington, D. C., Maryland

W. L. Davies

and Eastern Pennsylvania, was, prior to his association with Athey, assistant to the director of the National Production Authority at Washington, and has had more than 20 years of experience in the heavy construction industry.

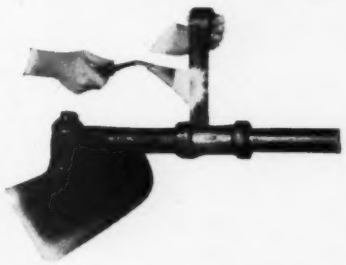
Trade Publications

To obtain copies of any of the publications mentioned in these columns, use postcards, page 177.

Locomotive Cranes—The Orton Crane & Shovel Co. has recently issued a new, 16-page catalog, designated as Catalog No. 84, which describes the advantages of the General Motors Allison torque converter units used in Orton cranes. A feature of the two-color catalog is a triple-page spread with a phantom view of the mechanism. Other features of Orton cranes described in detail are: sealed anti-friction bearings; air controls; automatic boom hoist brake; air-controlled limit switch; roller bearing swing; and the travel mechanism gears. Complete clearance dimensions, weights of rehandling clamshell buckets and rated lifting capacities of Orton standard gage 8-wheel locomotive cranes are also listed in the catalog.

More and more railroad maintenance men are depending on TAPECOAT to protect pipe joints and short pipe sections in underground service, at bridge crossings and wherever corrosion is a problem.

TAPECOAT is the coal tar protection in handy tape form. It comes in widths of 2, 3, 4, and 6 inches for spiral wrapping; and in widths of 18 and 24 inches for cigarette wrapping of large diameter pipe, tanks, etc.



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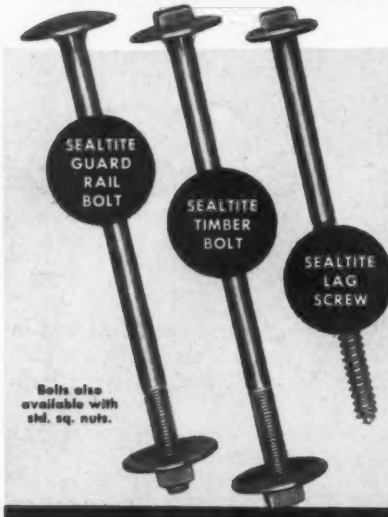

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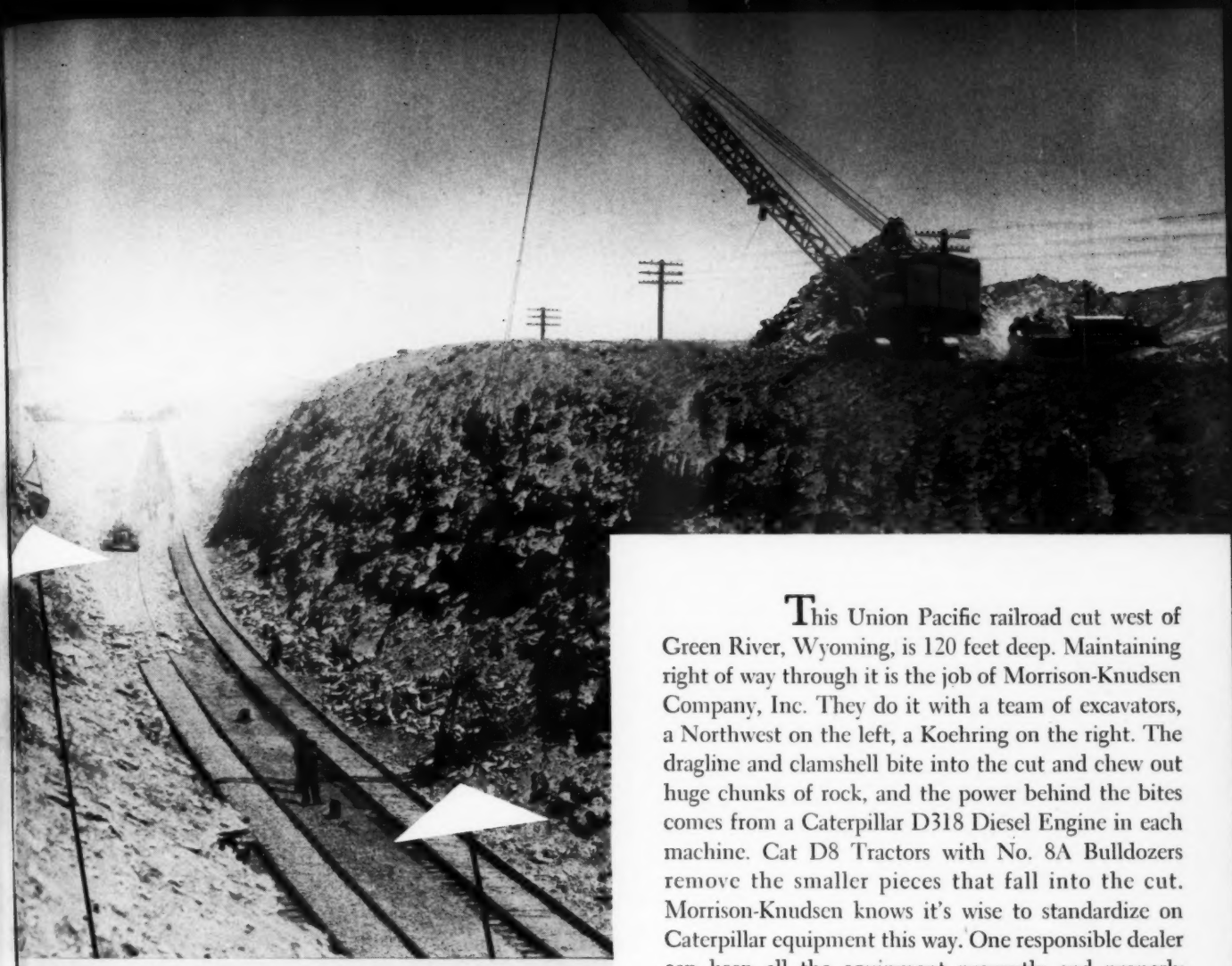

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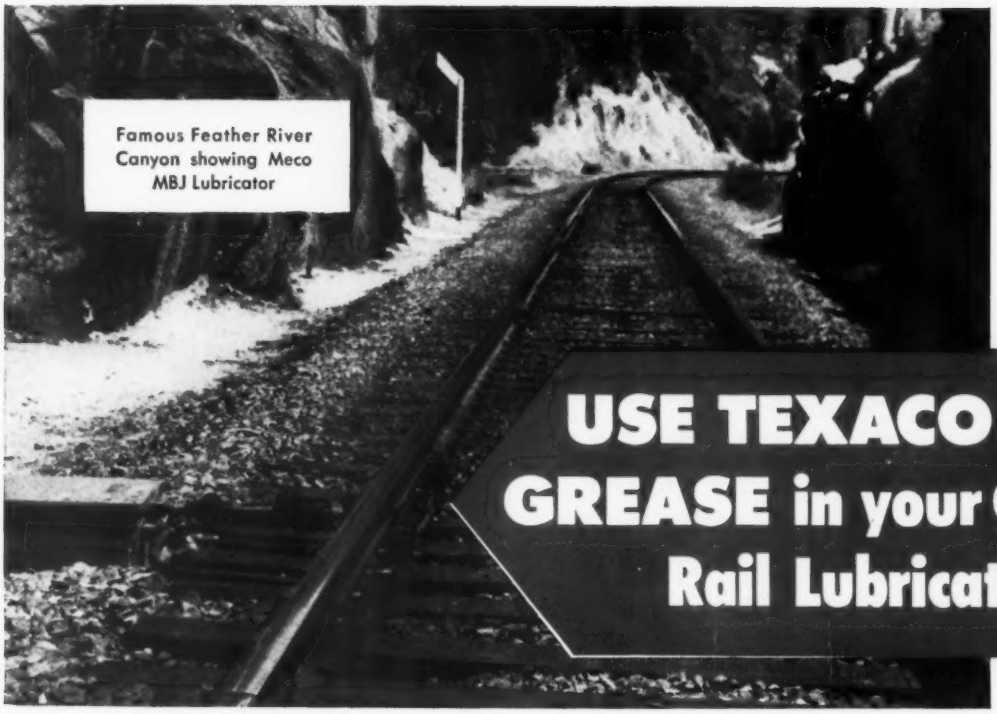

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